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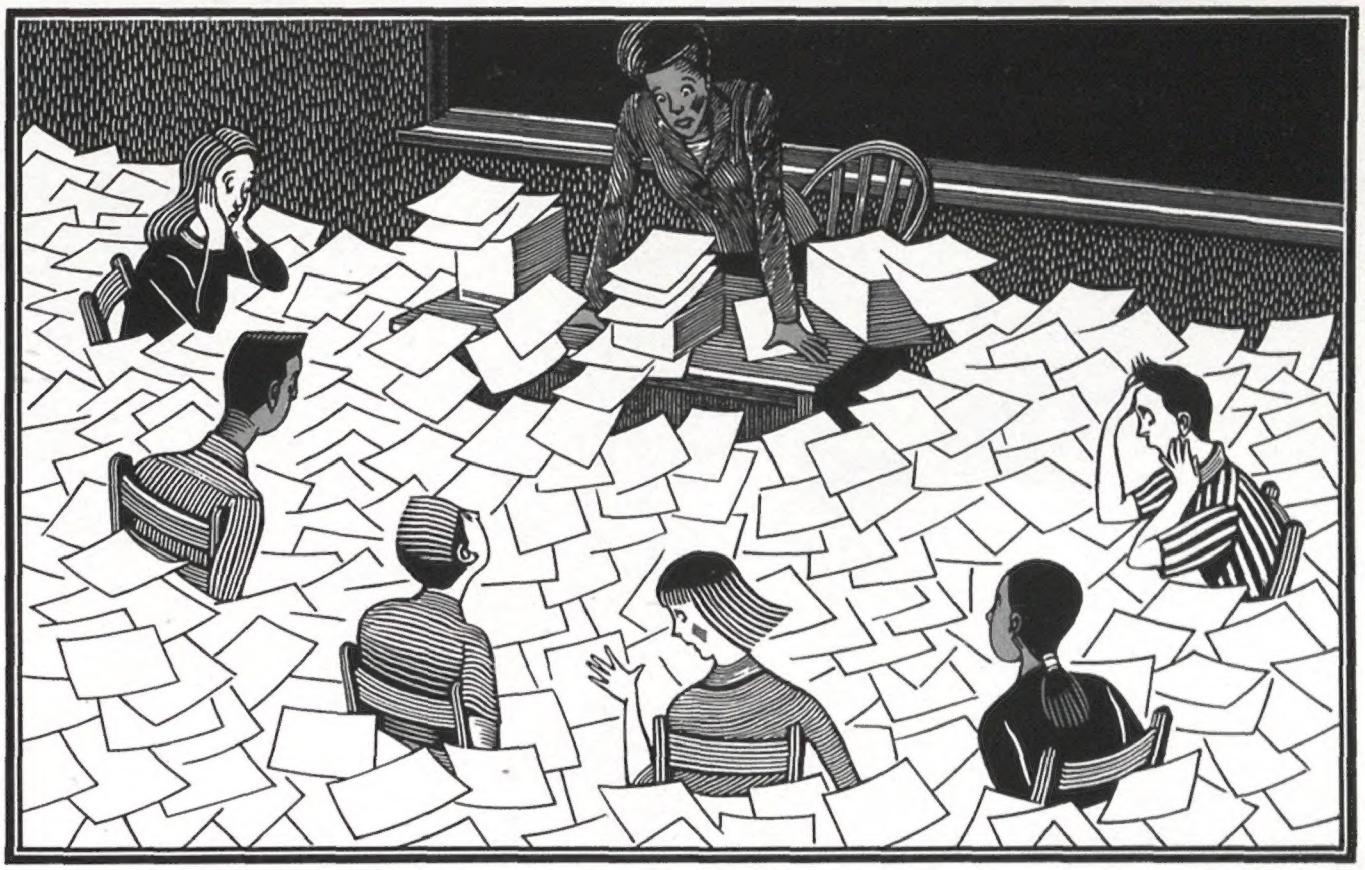

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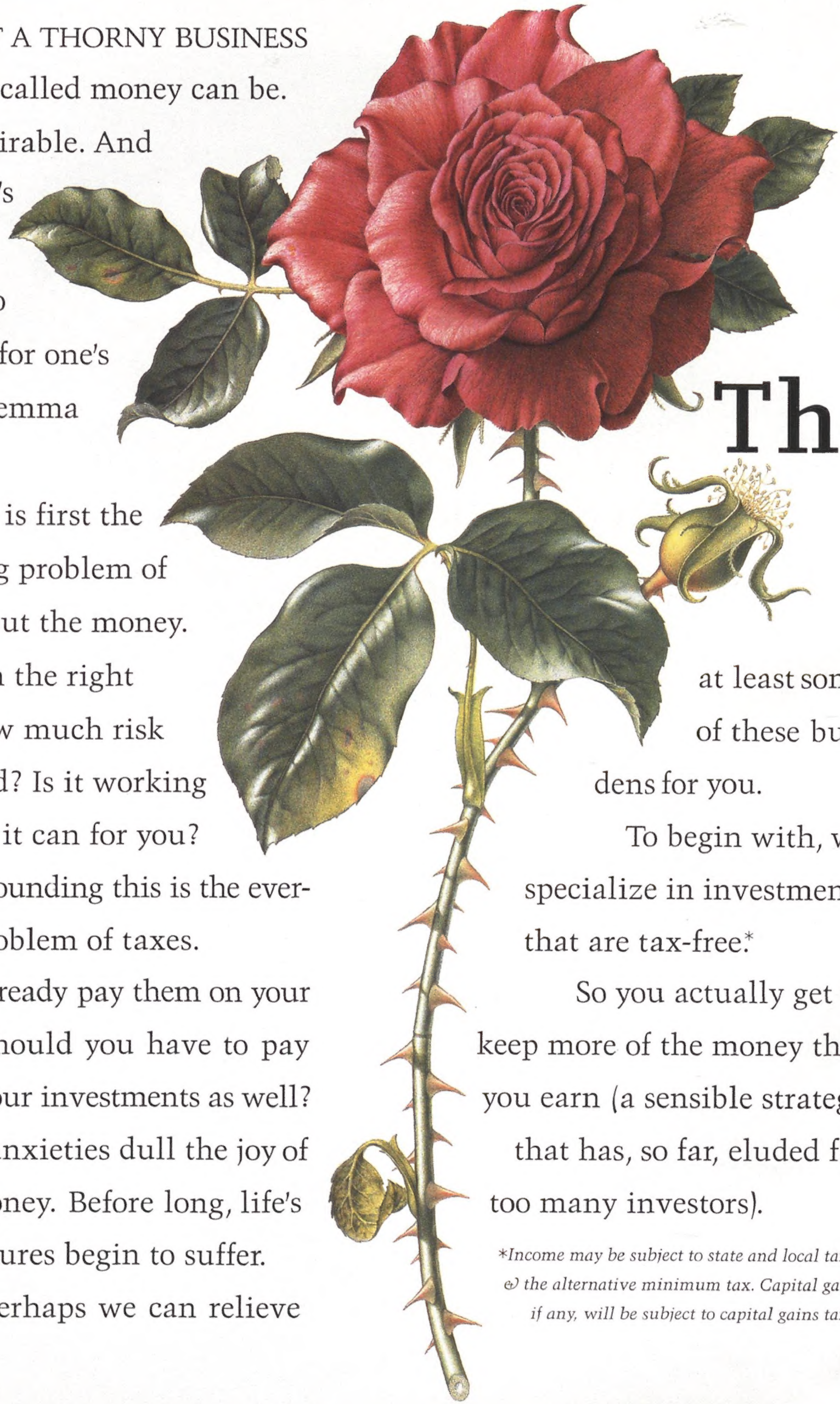

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Volume 20, Number 11

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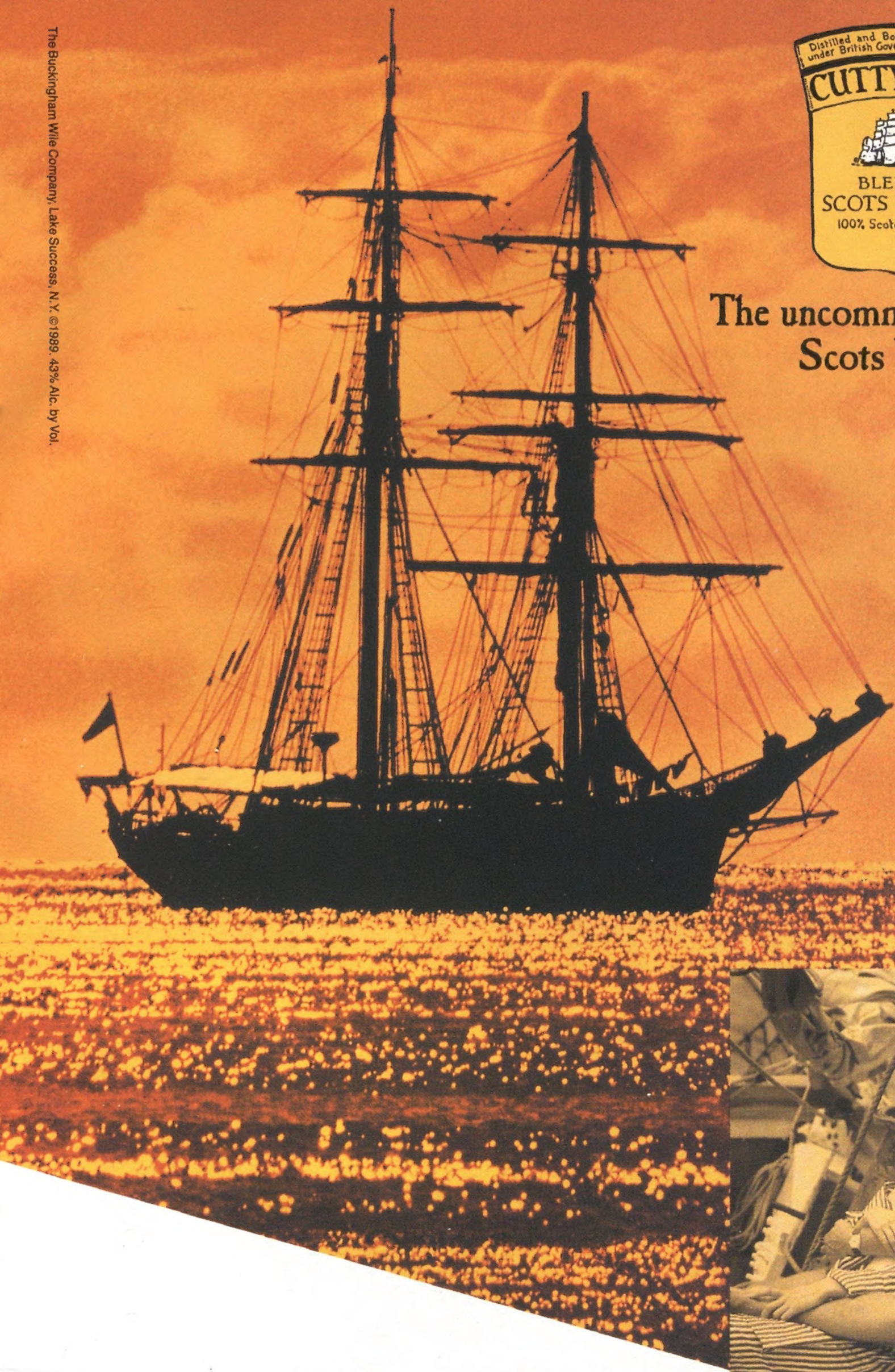

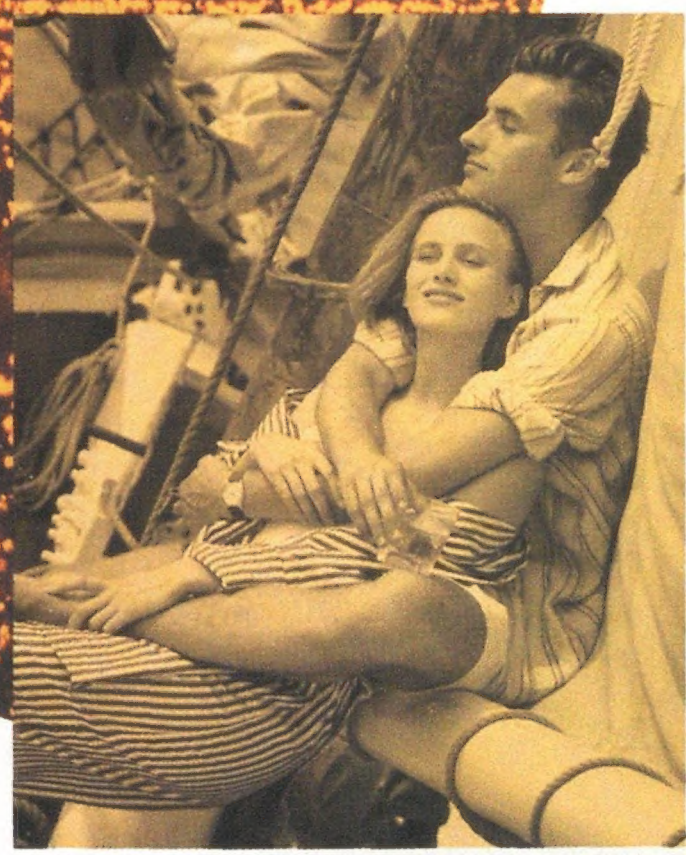

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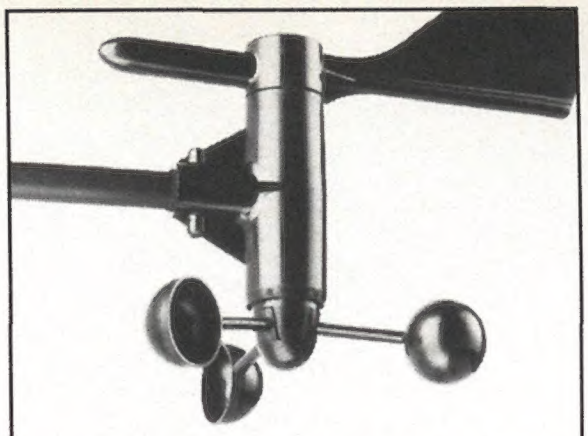

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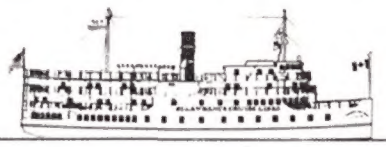

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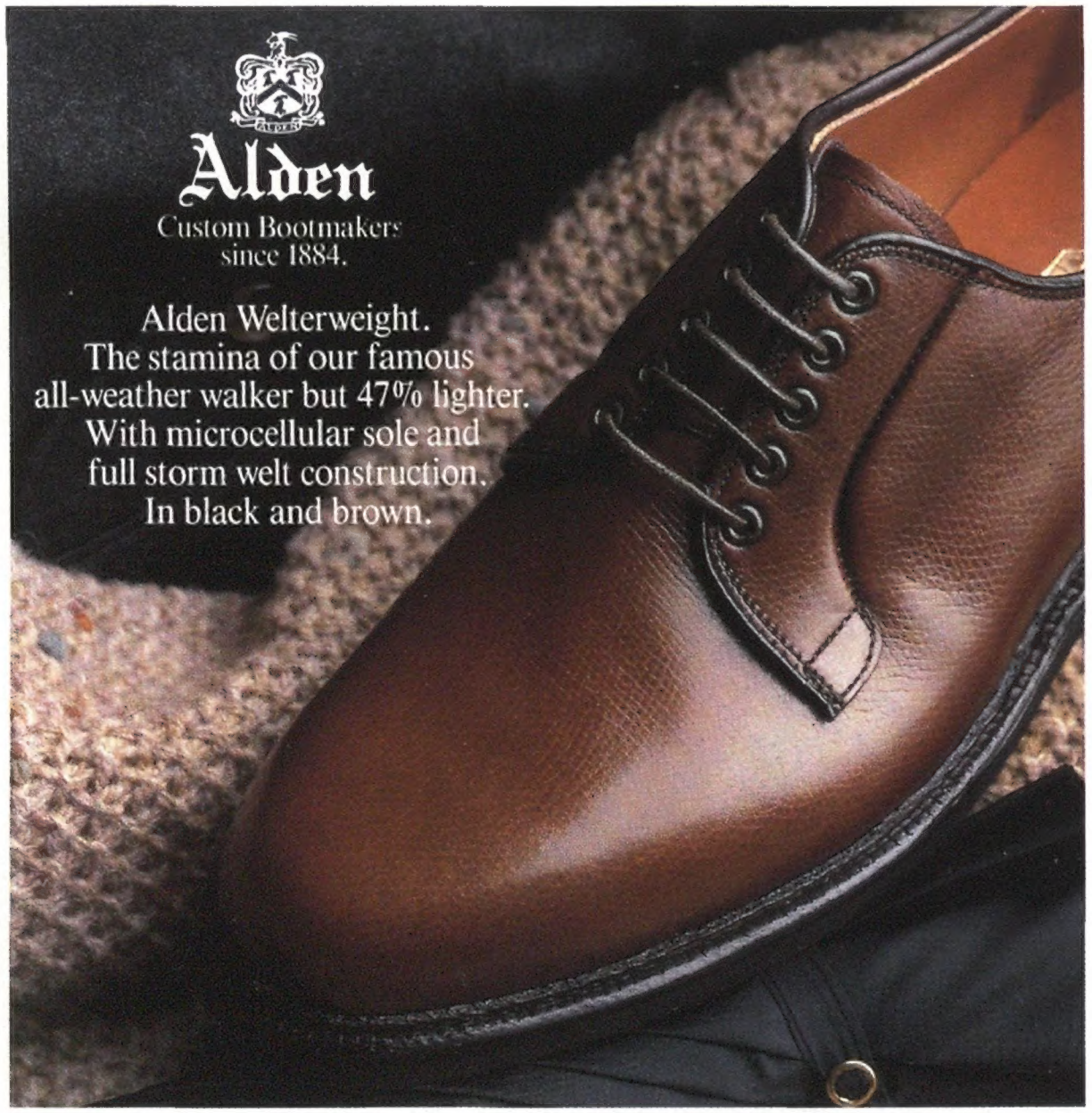

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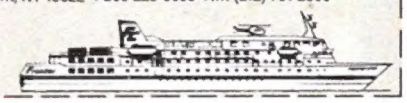

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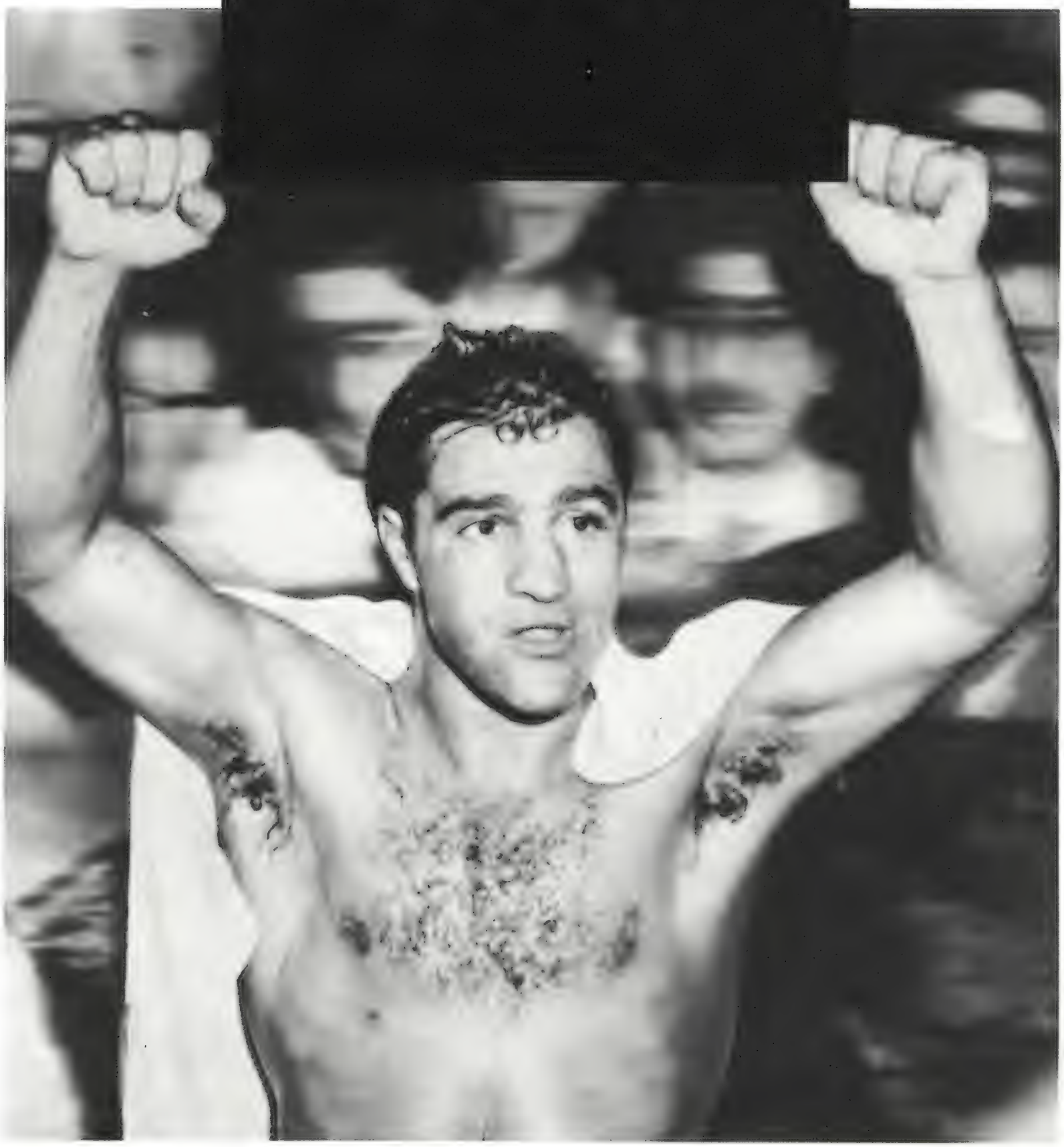

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Secretary Adams' comments

Smithsonian horizons

The extinct sabertoothed tiger is an illustration of the violence in predator-prey relationships

Many a natural history museum prizes the fossil remains of the great sabertoothed cats (*Smilodon*) of a bygone era. Wide-ranging and common for 40 million years, they persisted in the Western Hemisphere until about the end of the last ice age. These extraordinary predators were distinguished by curving, scimitarlike canine teeth, up to eight inches in length, that still inspire awe. But being so specialized, how effective were they in killing and consuming prey? As with the enormous branching antlers of the extinct Irish elk, doubts over the adaptive utility of "saber" teeth sometimes have led to speculation that their excessive development contributed to the disappearance of the animals identified with them.

That surmise finds essentially no support among specialists. While human activities are currently causing extinctions at a tragically accelerated rate, they have always been the rule—and survival the exception. Something less than a third of all known species of the Carnivora, for example, are still with us. If truly maladaptive, why should the same tendency toward elongation of the canines have occurred independently several times in different evolutionary lines? If the trend ran wild for some reason, why should the last survivors be ones with somewhat shorter canines? Besides, to have proliferated for 40 million years is a pretty good measure of success, not failure.

These considerations lead paleontologists in a different direction—toward investigations of jaw mechanics and inferences about predatory behavior. Most of the sabertooths were powerful and short-limbed, better at striking from concealment than at outrunning a fleeing herd. Muscle attachments indicate that they were capable of raking or stabbing with great force, and the serrated edges of their teeth would have inflicted gaping wounds. The vulnerable throats of large ungulates would seem to have been their principal targets, well away from vertebrae or other bones that might have broken off the narrow, elongated sabers. A factor in their disappearance may have been that many large herd animals they preyed upon also became extinct in the New World at around the end of the Pleistocene—a process arguably hastened by the arrival of the first human predators across the Bering Strait.

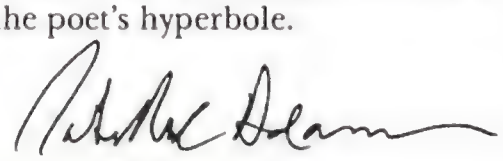
While there are not many certainties, all of this is relatively well established. But were sabertooths solitary or social hunters? Some, not all, were relatively small-brained. Are the interactive or communications skills needed to live or hunt in packs correlated with brain size, as many specialists believe? Perhaps, but contemporary large cats reach killing potential only after two to three years. Is it likely that sabertooth fangs matured in less time? If not, there must have been at least elementary familial groups that were fairly durable.

A new element of controversy derives from studies of as many as 2,000 specimens of *Smilodon californicus*. Dating from 10,000 to 40,000 years ago, they and their ungulate prey were trapped and preserved in the asphalt that continues to bubble up in the La Brea district of Los Angeles. Last November, Fred Heald and Christopher Shaw told a University of Texas symposium of the terrible injuries sustained by not a few of these animals. How could they have performed as predators—with broken limbs, dislocated hips, severe back injuries and chronic arthritis? The investigators sought to resolve this conundrum by reviving the idea that the sabertooths were social rather than solitary hunters, like prides of contemporary lions. Could severely disabled cats have received a measure of toleration from fit members of the group, limping along after them and feeding on scraps?

There is no way to conduct comparable studies of thousands of specimens of the great cats of today. Remote and shadowy as the sabertooths may seem, they are as vivid an illustration as we can expect of the violence inevitably associated with predator-prey relationships. We take for granted voracious feline appetites and an ongoing procession of weaker victims to satisfy them, masking the asymmetry by characterizing it as a food chain. In need of recognition are the desperate risks and uncertainties to which predators also are exposed. As National Zoo director Michael H. Robinson writes:

"The wild animal is confined by its behavioral imperatives, boxed in by territoriality, hounded by predators and disease, stressed by interspecific competition, and subject to the inexorable struggle to survive. For all animals that are hatched or born, only a few survive to propagate."

Keep this in mind if someone tells you that zoos are only a peculiarly human form of cruel and unusual imprisonment of animals. "Nature, red in tooth and claw" is an all-embracing law of the life of wild freedom, overshadowing the poet's hyperbole.



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Letters to the Editor

Shrimpers and sea turtles

Dear Sir: When I first read, in your December issue, Louisiana Governor Edwin Edwards' statement that "Perhaps some species were meant to disappear," I thought it one of the dumber things I had ever read. But shrimpers vote; turtles do not.

However, Governor Edwards' statement contains more wisdom than he either realized or intended. Some species were meant to disappear—the weak, the inefficient and the unadaptable. The species in question is neither the turtle nor the shrimper. It is the shrimp trawler. Any fishing method in which 90 percent of the catch is not the desired species amounts to aquatic strip-mining.

The best long-term solution is the banning of the shrimp trawler. Government monies should be made available to train the displaced shrimpers in the operation of shrimp ranches. The shrimpers would retain their livelihood, and the turtles and other unwanted victims of trawling would retain their lives.
Jim Mavros
San Jose, California

Dear Sir: I experienced firsthand the July blockade of our Texas harbors and channels. It was anything but nice. On the morning of the shrimpers' "protest" I loaded two visitors from Boston into my pleasure boat to go fishing offshore from the harbor at Port Aransas. On trying to get out of the harbor, we found four shrimp boats tied across the jetties, with ropes from one side to the other. We tried to get through, but were stopped when the boats swung their backs to block our departure. Then I tried to go under one of their ropes. To my amazement we were stopped and told that the crew of five would crush us with their chains if we persisted. Disbelieving, we started under, and stopped only when one man jumped into the water to pull down the ropes to catch us. Curses and threats were cast at us.

We finally got through when shrimpers were realigning their boats to join a few other fishermen offshore. Fishing was great, but once, when the engine stalled, we were almost smashed by a shrimper trying to run us down.

In my opinion the shrimpers were nothing more than a gang of lawbreaking bullies.
Larry Coffen
Sugar Land, Texas

Dear Sir: I am disturbed by the endangered species law and its effect on people's livelihood. As Governor Edwards said, if it is a question of shrimpers or turtles—bye-bye turtles.

Many species are extinct now, and I am elated that the dinosaur, for one, has gone. I would hate to have to tell the wife, "Look, a dinosaur just stepped on and smashed the baby."

I have trawled for 20 years as a sportsman and licensed commercial fisherman, and during this time I caught only one turtle—and returned it to the sea, alive.
Robert P. Pontiff jr.
Franklin, Louisiana

Dear Sir: Your article stated that U.S. shrimpers inadvertently catch and kill every year an astounding two billion pounds of nonshrimp, including many juvenile game and food fish.

The well-publicized decline in ocean fish populations apparently results, in part, from an archaic system of nets being dragged and drifted by commercial fishermen seeking specific species, at the expense of the total marine ecosystem.

Never has there been a more clearly demonstrated need to develop environmentally compatible commercial fishing techniques and a national conservation ethic for the management of ocean fish.
Mike Rosenthal
Williamsburg, Massachusetts

Dear Sir: As counsel for the National Wildlife Federation in the recent litigation over Turtle Excluder Devices, I would like to correct a few misimpressions left by your article. While it focuses heavily on shrimp losses claimed

In just one minute, this man's face is going to wake up.

His face will wake up to something dermatologists have known for years: To look healthy and trim over its bones, skin needs a step beyond cleansing. It needs exfoliation.

Exfoliation removes dead skin flakes. Shows sleeker-looking skin. Controls excess oil. Lessens clogging, trouble spots. Promotes faster skin renewal.

Shaving de-flakes a little, but to get all these benefits it takes a unique product: Clinique Scruffing Lotion—in four strengths for four skin types. Find yours, plus a fast, free skin analysis, at any Clinique counter.

To look its best, your skin should show a fresh surface every day. With Clinique Scruffing Lotion, it does.

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CLINIQUE
SKIN SUPPLIES FOR MEN

by fishermen opposed to using TEDs, it fails to mention that TEDs are 97-percent effective in eliminating the capture in shrimp nets of threatened and endangered sea turtles, reducing drowning mortality of these rare creatures to nearly zero. The article also implies that if shrimpers had complied with the 105-minute trawl time limit adopted in lieu of TEDs by Secretary of Commerce Mosbacher, sea turtles would have been adequately protected. In fact, data gathered by Secretary Mosbacher's own scientists indicated that limiting trawl times would only negligibly reduce sea turtle drownings and that the only effective means of protecting them is to require the use of TEDs. The article also does not mention that U.S. District Judge Thomas F. Hogan declared that Secretary Mosbacher broke the law by suspending the TED regulations. In the judge's words, "Anarchy simply cannot be used to justify abandonment of responsibility."

W. Robert Irvin, Counsel
Fisheries and Wildlife Division
National Wildlife Federation
Washington, D.C.

Smithsonian horizons

Dear Sir: Prestigious engineering awards have been around for a long time, notably those bestowed by the Institute of Electrical and Electronics Engineers Inc. in New York.

While the IEEE may not have the resources of its wealthier cousin, the National Academy of Engineering, the IEEE Medal of Honor, carrying an honorarium of $20,000, has been awarded to some of the most eminent engineers in history. In fact, Jack St. Clair Kilby, mentioned in Secretary Adams' column, received this medal in 1986.

Robin Peress Hornbuckle
Hampton, Virginia

South Sea Bubble

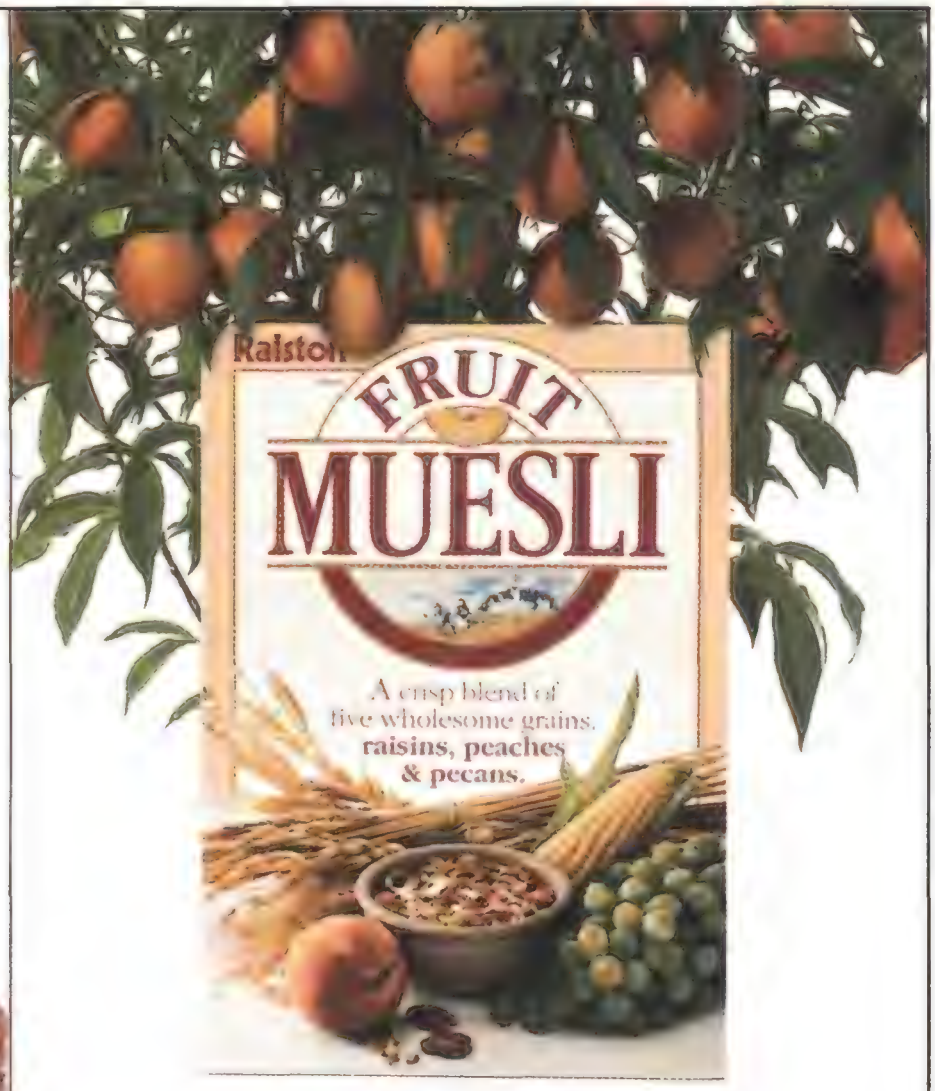
Dear Sir: Your formerly impeccable credentials are at risk. On page 156 there is a color photograph of "William III"; on page 164, in black and white, the same fellow is "George I." Now, please tell us—who is this wigged wonder?

John Kerhlikar
Shingle Springs, California

SMITHSONIAN *stubbed its toe, and a score of sharp-eyed readers have let us know about it. Below is the real William III, of the House of Orange, who belongs on page 156. George I, who rightfully appears on page 164 (and wrongfully on page 156), was the first Hanoverian to rule England.* Ed.

National Portrait Gallery, London

Cranberry Cornucopia



Peach Tree

Toy research

Dear Sir: Barbie, one of America's most popular icons, as your December cover indicates, symbolizes sex appeal at the expense of all other feminine attributes. But why shouldn't we pay tribute to her? She is the perfect woman for our society. She doesn't age, so she won't suffer the plight of millions of women: divorce, abandonment or widowhood. And Barbie can't talk. So she can't complain about being a victim of the American myth of the dependent female, which assumes that virtually all women and their children will be provided for by men, a myth that has resulted in boys and girls making different educational and career choices.

In another article you celebrate accomplishments in technology and engineering. A serious and accelerating shortage of engineers and scientists threatens the very livelihood of our country, as well as our position in the world marketplace. Studies of intrinsic abilities indicate there could be at least one woman for every two men, rather than the current ratio of 1 to 20, in the field of engineering. Women are also grossly underrepresented in the physical sciences, agriculture and many other fields. Your inclusion of a token Barbie surgeon and a Barbie astronaut among 28 attired in party dresses and swimsuits does not make much of a statement to little girls.

Linda L. Nott
Fresno, California

Dear Sir: About 25 years ago, while touring the Netherlands, our bus stopped at Volendam, where some of the inhabitants were in traditional costume. In a shop, I went through a basket of doll clothes. The shopkeeper tried to ask what I wanted. With hand gestures, I indicated the approximate height and waist size of Barbie, with a sweeping motion to indicate a big bust. She said "Oh, Barbie doll," disappeared into a back room and came out with a genuine Barbie-size Volendam costume, complete with wooden shoes. One little niece was very impressed with her Christmas gift that year.

Eleanor Felkner
Columbus, Ohio

Dear Sir: When I was 9 or 10, a relative who obviously knew little of my toy preferences gave me a Barbie doll. Barbie languished in a closet until my brother acquired his first G.I. Joe—the '60s version, 12 inches tall and fully jointed. I promptly had my mother make a set of fatigues for Barbie so she could parachute out of second-story windows and dive into Lake Crescent with her male counterpart. Barbie's military career fizzled out when I got my own G.I. Joe; with her fewer and stiffer joints Barbie could not compete.

Jana Hollingsworth
Seattle

Dear Sir: The original idea of marketing ants came from a retired Dartmouth College professor, Frank Austin, in 1931. His wooden containers were called Antville Fire Houses and had a whistle in the top. When the whistle blew the ants rushed around.

A friend and I decided to go into the business in 1935. As Educational Laboratories we made a one-dollar Anterium and copyrighted the name. We sold a few around Denver and acquired a

salesman, who sold a dozen each in Lincoln, Omaha and Des Moines. Then a telegram from Chicago asked, "How many for an exclusive for Chicago for 30 days?" We came up with the biggest number we could think of: 50 gross. Back came the order! As our salesman went on to the East, the standard became 50 gross—in Cleveland, Detroit, Philadelphia, New York, Boston.

Unfortunately, the ants were included with the Anteriums and required feeding daily. A store in Chicago had to have cops to keep the crowds from the window at ant-feeding time.

Our big years were 1936 and '37. My son got into the ant business in college and was on *What's My Line?* on his 21st birthday. The panelists failed to guess. By this time there was a two-dollar and a five-dollar size, still made of wood but with the ants mailed separately.

T. H. Barber
Denver

From Alan J. Friedman, M.D., of New York City, we learn that Professor Austin was shipping out 400 ant houses a day in the mid-'30s and had a whole series selling for $3.50 to $50. This led to a radio series, children's books, cricket houses and butterfly kits. Ed.

'10 +10' exhibition

Dear Sir: In 1986, the Stovall Museum of Science and History sponsored its annual International Dinosaur Art Contest and Exhibit. By invitation, young artists from the USSR sent 19 entries. Their most colorful, this imaginative tea party of prehistoric saurians [below], was 11-year-old Danil Lebeden's.

Peter B. Tirrell
Assistant Director, Public Programs
Oklahoma Museum of Natural History
(formerly, Stovall Museum)
Norman, Oklahoma

Maya site of Caracol

Dear Sir: I work as a volunteer helping the Massachusetts Audubon Society raise the $7 million needed to fully acquire, staff and protect 150,000 acres of tropical forests in Belize. The goal of the project is to demonstrate that, with proper management, a rain forest can be preserved and, at the same time, provide an increased and continuous source of economic security to those who live there and depend on it.

The picture of Arlen Chase with a Margay cat on his shoulders hints at the incredible diversity of intricately interrelated wildlife that abounds in the tropical forests of this ecologically marvelous little country.

When exploring Belize, I believed the Maya temple at Xunantunich, 42 meters high, was the tallest building in the country. If the Canaa is a foot and a half taller, the two tallest man-made buildings in Belize were made by the Maya, not by modern development. Let's keep it that way!

Frederic B. Viaux
Wellesley Hills, Massachusetts

F.D.R. Library

Dear Sir: Your author did not mention that the Franklin and Eleanor Roosevelt Institute provides grants for researchers at the library. As a recent recipient of such a grant, I know the importance of this program, which enables scholars to utilize all the wonderful resources that are available there at Hyde Park.

Cathy D. Knepper
Kensington, Maryland

Book reviews

Dear Sir: You state that Shelden M. Novick's biography is a first on Chief Justice Oliver Wendell Holmes. Catherine Drinker Bowen's *Yankee from Olympus*, certainly a major work, preceded it by 45 years.

Audrea Kupferle
Brooklyn, New York

W. Graham Arader III

Dear Sir: "If it makes you rich it's OK" seems to be the not-so-well-hidden message of Phil Patton's article. Breaking up old books for the greater profit that individual sheets will yield is indeed a common practice, but it's nothing to be proud of. Mr. Arader is only one of the more brazen practitioners in this deplorable business.

When a map or print is removed from its proper physical context it loses its scholarly value. The most famous atlases are generally spared the destructive habits of map dealers, as they fetch higher prices among private and institutional collectors. More common atlases are not so lucky. The clock is ticking much faster for one type, the so-called composite atlases made to order by 16th- to 19th-century European map sellers. The customer was given the option of choosing from among the hundreds of maps in stock at the time. The resulting custom-made atlases are unique, and often offer an intriguing profile of the geographical interests, tastes and personalities of those collectors who bought them.

These, when they remain intact, are important pieces of evidence of the history of bookmaking, of cartography and of historical geography. Since they do not always have great names attached to them, they are easy targets for breaking up, and are disappearing at an alarming rate.

James R. Akerman
Chicago

Dear Sir: Any dealer who deliberately destroys a complete copy of a book for the sake of selling its color plates or maps at a higher total price than the book itself might bring is not fit to call himself a bookman. Patton's statement that "Almost everyone in the trade does it," with no evidence for that bald condemnation, is a gratuitous insult to the vast majority of true bookmen, who consider this one of the cardinal sins of the profession.

Arader's crusade against auction houses that pick bids "off the walls" to increase prices and their own profits is his only saving grace.

It is regrettably true that the "gentlemanly business" of antiquarian bookselling can no longer boast that most of its number are gentlemen.

W. B. O'Neill
Reston, Virginia

Dear Sir: Arader is a consummate, arrogant cannibal loose in our garden of cultural endowments.

Stanley R. Grant
New York City

If this is the only exercise your cat gets, you'll be glad we developed Iams Less Active.

Introducing Iams Less Active For Cats.

By nature, cats don't like to exercise. But leading a less active lifestyle can lead to weight control problems in many cats, including those who have been spayed or neutered.

Whatever the reason for their reduced activity, Iams has developed a special food: Iams Less Active For Cats. Like all Iams Pet Foods, it's highly nutritious, providing all the protein, vitamins and other nutrients your pet needs. And it does all that without giving your cat something she doesn't need: too many calories.

Is your cat a candidate for Less Active? Feel the side of her rib cage while she's standing. If her abdomen protrudes beyond the ribs, your cat may be overweight.

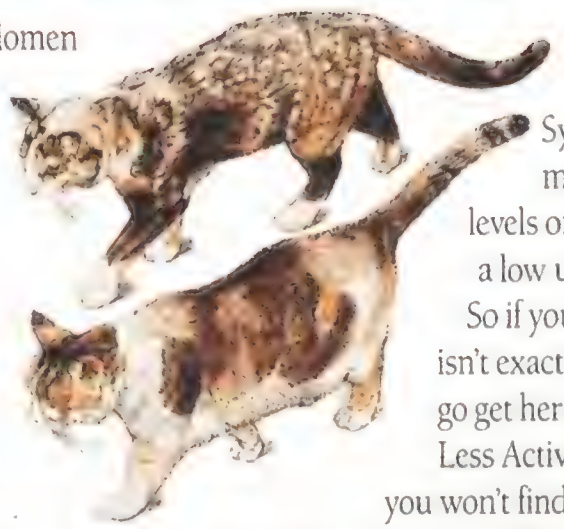
Iams Less Active, combined with proper portion control, is an ideal way to keep your cat trim. Its special formula provides the optimal balance in a high nutrition cat food. And it does that by reducing calories without sacrificing the taste cats love.

Iams Less Active For Cats reduces calories by replacing some of the fat with carbohydrates. Carbohydrates not only have half as many calories, they also provide energy. Other brands merely add excess fiber, which interferes with nutrient absorption and increases stool odor and volume.

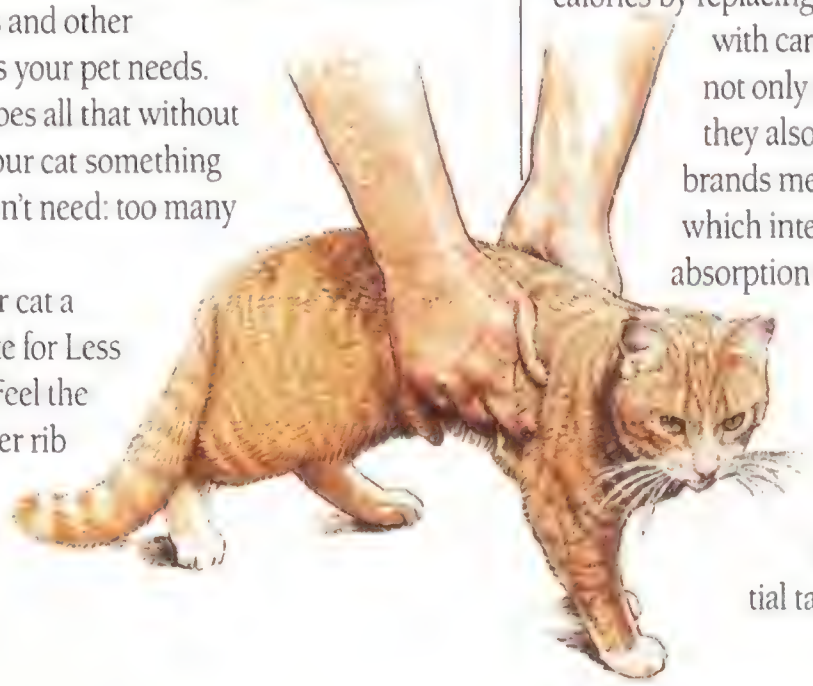
What's more, Less Active includes high levels of quality chicken, meat and fish proteins, the best sources of essential taurine. And Less Active helps prevent Feline Urologic Syndrome (F.U.S.) by maintaining low levels of magnesium and a low urinary pH.

So if your favorite feline isn't exactly a go-getter, go get her new Iams Less Active For Cats. But you won't find it in supermarkets. Iams is sold only at veterinarians' offices, pet supply stores and feed stores.

To find the nearest retailer, or learn more about Iams, call 1-800-525-4267 (IAMS).



What shape your cat is in will determine whether she's a candidate for Iams Less Active.



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We plan to lose money on this offer!

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Extra Fine quality

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While supplies last, we'll sell new customers the 1920 U.S. "Pilgrim" silver half dollar in Extra Fine condition at a special introductory price. This sought-after coin classic was one of the first issues in the official U.S. commemorative coin series. Authorized by Congress to honor the 400th anniversary of the first permanent European settlement in new England, this legal-tender coin was struck in limited numbers and is a true scarcity in the beautiful quality we offer. Shown is the Mayflower in full sail, on its arduous voyage to America, and a portait of Governor Bradford holding a Bible, in the trying first year of settlement.

1 coin, $69 postpaid. Save more: 3 for $199. Limit 3. Order #8517. To order by credit card, call toll-free 1-800-451-4463 at any time.

Or send a check or money order to: International Coins & Currency, Inc., 11 E. State St., Box 218, Dept. 1312, Montpelier, Vermont 05601. As an added thank-you for trying us, we'll even pay the postage. Money-back guarantee - 30-day home examination.

Around the Mall and beyond

Clifford Stoll, the "hacker-cracker," is at ease with either yo-yo or computer.

Cliff Stoll talks with his hands. He uses both of them, molding words with them, striking them downward to mark a thought. When a lot of feeling goes into the thought, Cliff flings his whole body in after those hands—a reserve army division securing a beachhead in your mind.

You may have seen Cliff on ABC's morning show *Good Morning America* back in December. He was the slightly built, boyish interviewee who wore his hair long and wild, and his blue jeans clean and faded. He tried to control his hands as he answered questions about his best-selling book, *The Cuckoo's Egg*. But it was no use.

Clifford Stoll has plenty of reason to show emotion when he talks about that book. Its success turned a sudden bright light on him, giving him what he calls "my one moment of fame." When I talked to him, on a cold day in Cambridge, Massachusetts, he was juggling his schedule to work in meetings with TV people. "I'm afraid I'll actually *believe* all this," he said. "I get tempted to think that what I've done was important. At most it was a little important in a very small area."

What Stoll had done was track down a computer spy, a "hacker" who had gained entry into many military and research computer networks. That's what his book is about. It's a computer-age detective story, instantly fascinating to the computer generation and astonishingly gripping to the rest of us. "I tried to write the story so that people would come to understand a little about computers," he told me.

Stoll's electronic adventure took place on computer screens, so geography matters little. But in August 1986 he was based at a research lab in Berkeley, California, an astronomer being nudged rather uncomfortably into computing. One day he found a 75-cent discrepancy in a charge for computer use. Not much of an error, except to a scientist dealing with errorless computers. He set out to find the cause of the glitch. It took him a year and changed his life.

For one thing, Stoll got a job at the Harvard-Smithsonian Center for Astrophysics. He did some of the work on his book there in Cambridge. That puts him on my beat, and I took off happily for my icy native New England to see him.

Even on a bitterly cold day the Center for Astrophysics is good to visit. I wandered into the complex, a few blocks from Harvard Square, searched for the proper building and climbed three flights of stairs to Cliff Stoll's office. Locked and dark. I wrote him a note to find me in the library, then went back down there to wait. Within two minutes he poked his head in.

He hadn't been up to his office, hadn't seen the note, didn't know what I looked like. A fey beginning. The scientists I had passed in the corridors must have spotted me instantly as an outlander and passed the word.

The nucleus of Cliff's little room is his assemblage of computers. Messages sprouted from it like leaves on a tree. He picked off a couple, glanced at them,

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THE LAND BEFORE TIME
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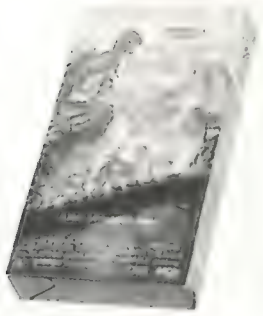
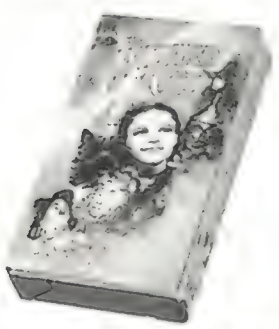


GHOSTBUSTERS II
5944082

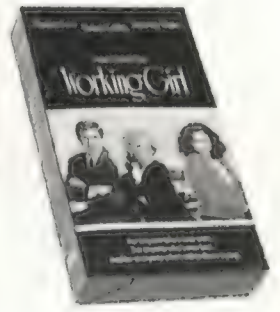
THE WIZARD OF OZ (ANNIV. ED.)
2941082



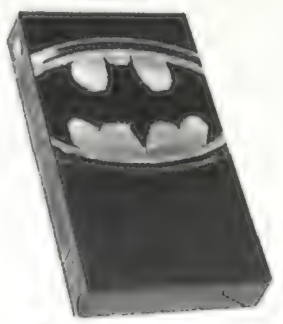
WHO FRAMED ROGER RABBIT?
5499072

TAP	5920062	LAWRENCE OF ARABIA (RESTORED)	5919092	E.T. THE EXTRA-TERRESTRIAL	6811062
SAY ANYTHING	3720032			DIE HARD	3676072
SEE NO EVIL HEAR NO EVIL	5942002	THE MALTESE FALCON	0508072	THE COLOR PURPLE	6301032
BEACHES	5498082	COUSINS	4472012	AN AMERICAN TAIL	2184042
RAIN MAN	2869062	THE NAKED GUN	4471022	LETHAL WEAPON	6308222
PRIME OF MISS JEAN BRODIE	3731002	A CRY IN THE DARK	6383042	STAR WARS	0564652
		HEARTBREAK HOTEL	5497092	DIRTY DANCING	4955152
PET SEMETARY	4479042	K-9	5834012	CROCODILE DUNDEE II	4415012
THREE FUGITIVES	8501072	MISSISSIPPI BURNING	2373052	FATAL ATTRACTION	4393072
THE PRINCIPAL	5908022	CAMELOT	6027482	COCOON	3553882
YOU CAN'T TAKE IT WITH YOU	5949032	PLANES, TRAINS AND AUTOMOBILES	4394062	PREDATOR	3649012
				TOOTSIE	1509122
SUSPECT	5911072	BEVERLY HILLS COP II	4319082	GIANT	6080182
MR. DEEDS GOES TO TOWN	5948042	ADVENTURES IN BABYSITTING	5486022	CLARA'S HEART	6372072
TRUE BELIEVER	4092012			THE BRIDGE ON THE RIVER KWAI	1606302
TOP GUN	4269322	AN OFFICER AND A GENTLEMAN	2021352		
WHITE CHRISTMAS	2072252			ABOVE THE LAW	6336022
GOOD MORNING, VIETNAM	5482062	WEST SIDE STORY	0505912	BATTERIES NOT INCLUDED	6810072
THE GODFATHER PART II	0018592	BEVERLY HILLS COP	2053362	THE WITCHES OF EASTWICK	6323072
WILLOW	1982002	THROW MOMMA FROM THE TRAIN	2351012		
GHOSTBUSTERS	1742682			DOCTOR DOOLITTLE	0732212
MY FAIR LADY	3507512	YOUNG GUNS	7266042	APOCALYPSE NOW	2001132
ROBOCOP	2350022	SINGIN' IN THE RAIN	2554552	HOLIDAY INN	1035152
CHARLOTTE'S WEB	2095282	PLATOON	6500282	THE PRINCESS BRIDE	1250052
ANNIE	1516132	SHORT CIRCUIT	3607192	RAMBO III	7975062
THE ACCUSED	4418082	SHORT CIRCUIT 2	5906042	BIG BUSINESS	5494022
BACK TO THE FUTURE	2114172	HARRY AND THE HENDERSONS	2219032	OLIVER!	1760242
GORILLAS IN THE MIST	5804072	BULL DURHAM	2360002	RED HEAT	7987022
SCARFACE (1983)	2168042	CLEOPATRA	0579432	STAND BY ME	1924432
CROCODILE DUNDEE	4297122	GANDHI	1533042	THE DEER HUNTER	2124152
MY STEPMOTHER IS AN ALIEN	5902082	IRON EAGLE II	7991062	ALIEN	0002812
		ACCIDENTAL TOURIST	6386012	THE GODS MUST BE CRAZY	7340042
AMADEUS	6529172	MOONSTRUCK	2716012	DEATH WISH 4: THE CRACKDOWN	3449032
JANE FONDA'S COMPLETE WORKOUT	6359042	SEVEN BRIDES FOR SEVEN BROTHERS	2518352		
				TUCKER	4417092
A FISH CALLED WANDA	3675082	THE CARE BEARS MOVIE II	1862132	THE STING	1005292
EDDIE MURPHY: RAW	4392082	STAR TREK IV— THE VOYAGE HOME	4306112	OVERBOARD	3657002
SOUTH PACIFIC	3506452			BUTCH CASSIDY AND THE SUNDANCE KID	0517632
ON GOLDEN POND	0523572	ROMANCING THE STONE	0894252		
THE LAST EMPEROR	1974002	COLORS	2355072	THE LOST BOYS	6315072
OKLAHOMA!	0054392	STAR TREK II— THE WRATH OF KHAN	2013352	FUNNY GIRL	1511262
THE UNTOUCHABLES	4321042			HELLO, DOLLY	0609472
DIRTY ROTTEN SCOUNDRELS	2372062	STAR TREK III— THE SEARCH FOR SPOCK	2016322	MARRIED TO THE MOB	2361092
MICHAEL JACKSON'S MOONWALKER	4686032			LITTLE SHOP OF HORRORS (1986)	6297172
		TO KILL A MOCKINGBIRD	1022282		
OUT OF AFRICA	2131162	ALIENS	3609252	THE LAST UNICORN	0685022
SESAME STREET PRESENTS: FOLLOW THAT BIRD	6117232	STAR TREK— THE MOTION PICTURE	2035212	THE QUIET MAN	4032122
				STAKEOUT	5488002
GREASE	2074312	FULL METAL JACKET	6325052	CABARET	4001502
THE MUSIC MAN	6147012	THE TERMINATOR	6528182	FROM HERE TO ETERNITY	1917002
PINK FLOYD—DELICATE SOUND OF THUNDER	4627052	BILL & TED'S EXCELLENT ADVENTURE	3912012	THE GODFATHER	0008512
				BIG	3674092
DANGEROUS LIAISONS	6387002	MAJOR LEAGUE	4478052	COCKTAIL	5493032
EVERYBODY'S ALL AMERICAN	6380072	ALIEN NATION	3698012	BEETLEJUICE	6330082
ARSENIC AND OLD LACE	0735442	CHANCES ARE	5932022	BEN-HUR	2603312
FLETCH LIVES	5823042	COMING TO AMERICA	4416002	RETURN OF THE JEDI	3547532
IMAGINE: JOHN LENNON	6368032	THREE MEN AND A BABY	5491052	THE EMPIRE STRIKES BACK	0910412
CROSSING DELANCEY	6371082	TWINS	5810092	COCOON II	3710052
PUNCHLINE	1994062	THE SOUND OF MUSIC	0039472	TEQUILA SUNRISE	6389082

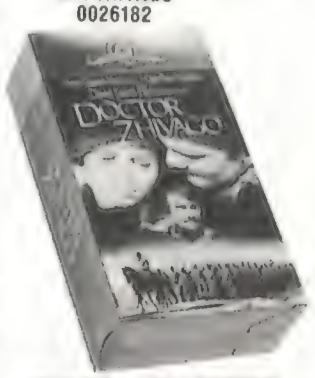
WORKING GIRL
3722012



BATMAN
6425042



DR. ZHIVAGO
0026182



THE TEN COMMANDMENTS
2026552

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threw them away. Then he riffled the keys of his console—a casual cadenza with one of those restless hands—and a message appeared on the screen: "You have mail." He shrugged and clopped a few more keys. The words vanished.

Across from the computers, a small table sagged with piled documents, among them one he wanted me to see. Stirring through the stacks, he sent a ream of presumably priceless information cascading to the floor. He kicked at the paper-slide balefully and suggested that we go to lunch. Good man.

The Smithsonian's newest best-selling author came from Buffalo, New York. He was 10 when an astronomer at the Buffalo Museum of Science asked him if he'd like to look through a telescope. That turned him on to astronomy. He never lets you forget that astronomy's his game; computers are just a tool. "After all this fuss about the book is over and I'm anonymous again," he says, "I'll get back to astronomy."

One wonders if he can. Despite his protests that computers remain beyond his full understanding and outside his main interest, *The Cuckoo's Egg* reveals two very sharp experts at work. One is the mysterious hacker. He breaks into supposedly secure computer networks and establishes bogus authority to dig for data, just as the cuckoo lays its egg in another bird's nest, there to be hatched and fed. The other is Cliff, who was introduced by his TV host on *Good Morning America* as the "hacker-cracker."

Instead of closing the hacker down, by changing passwords, Cliff organized a way to monitor him, giving him every chance to operate. He logged the intruder's every move. He even set up a sting operation using false data. The hacker bit like a starving shark. Clearly, he was a spy. It later turned out that he was selling information to the KGB.

Getting official help to nail the intruder proved frustrating. Stoll went to those great agencies that are supposed to make us feel safe and found them most reluctant to get into the act. Computer espionage always seemed to fall into someone else's bailiwick. Also, that tiny financial discrepancy came back to haunt him. The FBI would have been interested in a loss of even as little as a half-million dollars. But *six bits*?

I chuckled at the mental vision of Cliff Stoll, straight from what he calls the "People's Republic of Berkeley," hair flying as wildly as his hands, trying, in his boyish voice, to convince govern-

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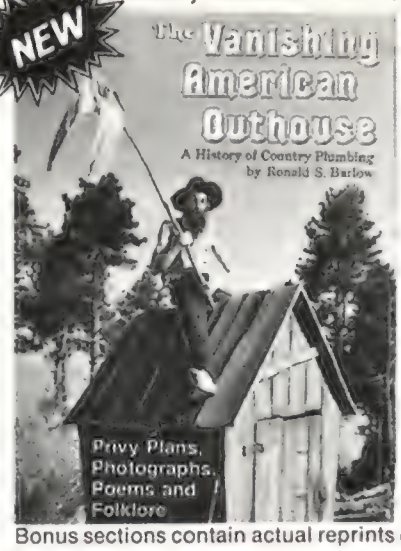
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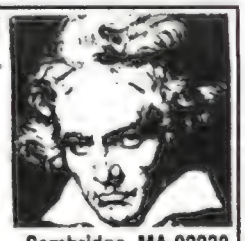

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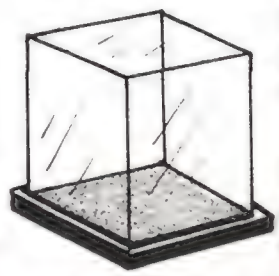

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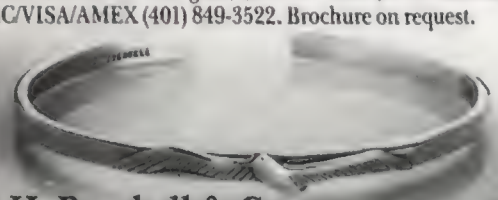

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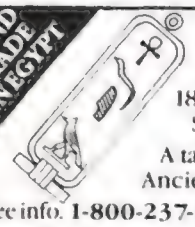

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ment agents that he was sincerely concerned with national security. But he did surprisingly well. He got key people interested enough to help him. For certain of these establishment figures Cliff developed respect and admiration.

His broadening attitudes added to the strain that the hacker hunt had been putting on his relationship with Martha. Martha is now his wife. She comes across in the book as a delightful, whip-smart woman who dreams up new and brilliant schemes to crack the hacker. She thought of the sting operation.

The two would discuss such plans in the accents of Boris and Natasha, the evil spies of *The Bullwinkle Show*, one of the world's few cartoon series that was pure joy: "Vell, Natasha, we have accomplished mission one."

"Vonderful, Boris . . . vhat is mission one?" And so on.

Without revealing the book, I'll let slip that the hacker caper was successful, the forces of evil exposed, the American Way triumphant—but all within that impersonal computer world.

"Did you ever see the bad guy?" I asked Cliff. "It's funny," he replied, "I felt I didn't need to see him. I knew him. I'd watched him work, his mental processes appearing on the screen, week after week." He paused. "I did see a photo after they got him. A youngish guy. Probably in his 20s. Kind of fat-looking."

Cliff is still fighting off suggestions that he establish himself in a new field of computer security. But he's not eager to take on more assignments like the last one. He spent ten hours a day on the villain's trail, often sleeping under his desk in the lab, and was still responsible for fulfilling his normal duties.

That life was tough on Martha. Having finished law school, she passed her bar exam and got a job as a law clerk in Boston. Now she's clerking for a federal judge down in Washington. "What's hard," says Cliff, "is missing each other." He also misses Berkeley. But he's overjoyed to find that Cambridge is nearly "Berkeley East."

"When the Smithsonian wrote and told me to come, I thought Oh God! Harvard! Stiff and formal. Neckties. But the people I work with aren't that way at all. They're the same as in Berkeley. And here are the same street performers offering you really good bits of music. Give them a quarter if you want, a buck if you're happy. I'm glad I'm here."

For once, Stoll has money to spend, but that doesn't seem to matter any

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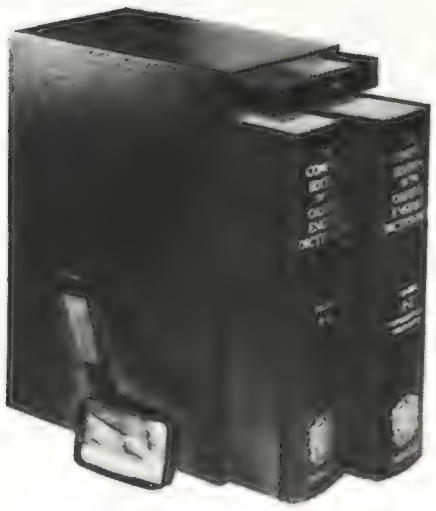

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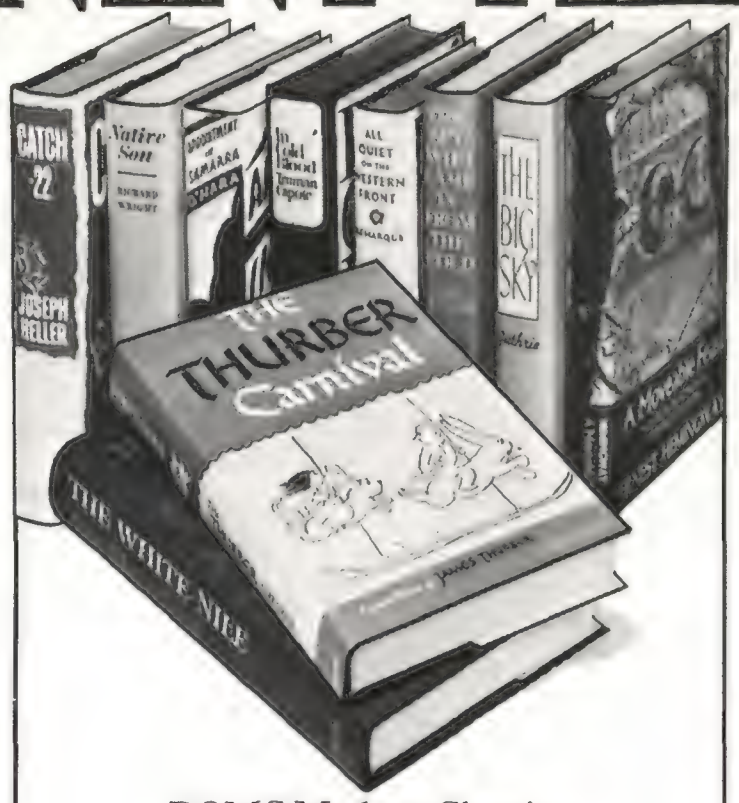

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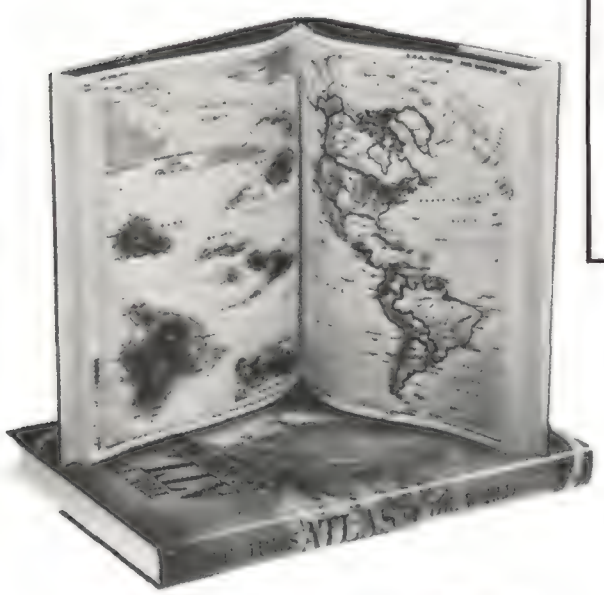

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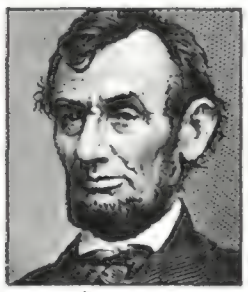

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more than when he was broke in Berkeley. "I dress the same and I still don't own a car. But I decided that instead of having my bike shipped from California, I'd buy a second one. And instead of looking through bulletin-board notices of stuff for sale, I went into a bike store and said, 'Hey, I want *that* one.' I didn't even look at the price tag."

He also bought a laser printer ("but that was for work") and then blew ten whole dollars on a handmade, polished-mahogany yo-yo. "My one real extravagance," he said.

I'd been warned that he'd probably do tricks with a yo-yo while I interviewed him. But not until now—as lunch was ending—did he produce his little beauty. "We used to go on scavenger hunts in California," he said. "We'd go after silly things like a bucket of smog or a bottle of sunshine, and once the list had a yellow yo-yo. I was the only one to find a yellow yo-yo. I learned how to use it. But this one's much better."

He played with it thoughtfully while we walked toward Harvard Square. "I really like your book," I said. "I'm still a computer illiterate, but it grabbed me. Those short sentences and terse little paragraphs to make it exciting . . ."

He exploded in laughter. "I have to tell you that after I'd finished four or five chapters, I gave them to a friend to read. He handed them back the next day. 'Cliff,' he said, 'you've got a good story, but you can't write. Learn to write, Cliff.' So being just a dumb scientist, I bought a book about how to write and I followed directions. I put in people. I made sentences short and I chucked in paragraphs that maybe had only two words in them. The book said that sort of thing would add excitement and . . . uh . . . 'pace.' I just did what I was told. Now you know."

We paused by the subway station and he spun his yo-yo through a thing called, I believe, "rocking the baby." "I never realized you could have *fun* when you write," he said. "I had quite a lot of fun doing the book. Was that OK?"

"You bet it was," I said.

I seized one of his hands, bringing it back to earth and shaking it, then headed for the escalator. He started toward the Center, "walking the dog."

Down by the tracks, where it was warmer, a young guy was pinging out "Greensleeves" beautifully, on a dulcimer. I dropped a buck in his hat.

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Phenomena, comment and notes

Time is running out for forest birds, both on their breeding grounds here and where they winter in the tropics

Years ago on a long drive home, one of the preschoolers sleeping in the backseat sat up around midnight, leaned forward and asked: "How do we know we're not on somebody else's television?" I feel much too creaky in too many joints to believe I'm just electrons hitting somebody's TV screen, but sometimes life does seem like a movie. Outside our immediate circle of work and home, we are only watchers. The film has no beginning and no end; we come into the theater when we are born, and leave when we die. We are vaguely aware of the major events that happened before we started watching, but are blissfully unaware of the changes happening in the background. We do not truly realize that the physical setting changes over time.

When we look up at the night sky, we do not know that the sky once appeared much darker, the stars brighter. When we walk in the woods, we do not miss the animals that once lived here but live here no more. We do not miss passenger pigeons or Carolina parakeets: we have never seen them and would be dumbfounded if we did. The days when wood bison and elk, cougars and wolves roamed what are now the streets of Washington, D.C. seem as remote to the anxious commuter as does the age of the dinosaurs.

Today the small, often brightly patterned birds that flit through our spring and summer woods—the warblers, vireos and tanagers that add moving points of brightness to the overall tapestry—are quietly disappearing. Only the aficionado will notice which birds no longer migrate through or nest in what forests. All of us will sense that the woods somehow are not quite so alive.

Last October's *Proceedings of the National Academy of Sciences* (*PNAS*) documents the decline. Until now the situation has been analogous to global warming. Most scientists believe that if we keep pouring greenhouse gases into the atmosphere, the world will sooner or later become warmer. But there are so many natural fluctuations in temperature from year to year, and so many other factors involved, that few scientists have been prepared to say that human-induced warming has actually begun. Until recently, ornithologists have speculated that forest birds must be declining as the forests are cut in North and now South America, but have been unable to say for sure.

Now, a decline in birds over the past ten years has been demonstrated by Chandler S. Robbins, John R. Sauer and Sam Droege of the U.S. Fish and Wildlife Service, and Russell S. Greenberg of the National Zoo. Their data, documented in October's *PNAS*, were supplied from breeding bird surveys done each spring during a recent 21-year period, along nearly 2,000 routes across the country. Resident birds, the ones that live here year-round, and tem-

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perate-zone migrants are holding their own and even increasing. But during the period 1978 through 1987, Robbins and his colleagues report, 20 species that migrate to the tropics showed significant declines, while only four showed significant increases.

In December, Princeton University Press published *Where Have All the Birds Gone?* by tropical biologist John Terborgh, who has just moved from Princeton to Duke. Terborgh is one who *has* noticed that some of the small forest birds he watched as a boy in Northern Virginia are no longer there, even in wooded parks encompassing hundreds of acres. He estimates that today we have about a quarter of the migratory land birds that were here when the first Europeans arrived. About 60 percent of the East is still listed as "forested," Terborgh notes, but much of that is successional forest, where woody plants are reclaiming abandoned farm fields, timbered land and the like. Young forests are not as rich as mature ones in bird life: a three-year-old plant community may support 40 breeding pairs per 250 acres; by the time the wood is 15 years old there may be 100 breeding pairs; a forest a century or older supports more than 200 breeding pairs in the same area. Worse, forest acreage in much of the East exists only in fragments dominated by what biologists call edge. And edge habitat, I was to discover, is not the unmixed blessing I had always understood it to be.

It all came together in December when, with perfect timing for something planned two years in advance, more than 300 ornithologists from Canada, Mexico, Costa Rica, Panama, Colombia, Trinidad and Cuba, as well as the United States, met in Woods Hole, Massachusetts, to assess the calamity and figure out what to do. The conference was sponsored by the Manomet Bird Observatory, a private organization in the Massachusetts town of the same name.

For three days we sat on benches worn smooth by Nobel posteriors in the auditorium at the Marine Biological Laboratory (SMITHSONIAN, June 1988), as speaker after speaker filled in the often conflicting details. Terborgh was the opening speaker, bringing the audience up to date since the last such conference, held in 1977 at the National Zoo's breeding facility in Front Royal, Virginia. The excitement of that meeting, an atmosphere of surprise and

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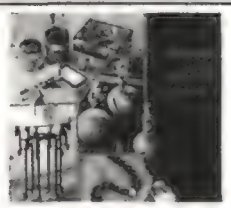

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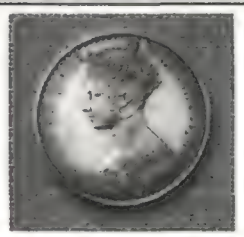

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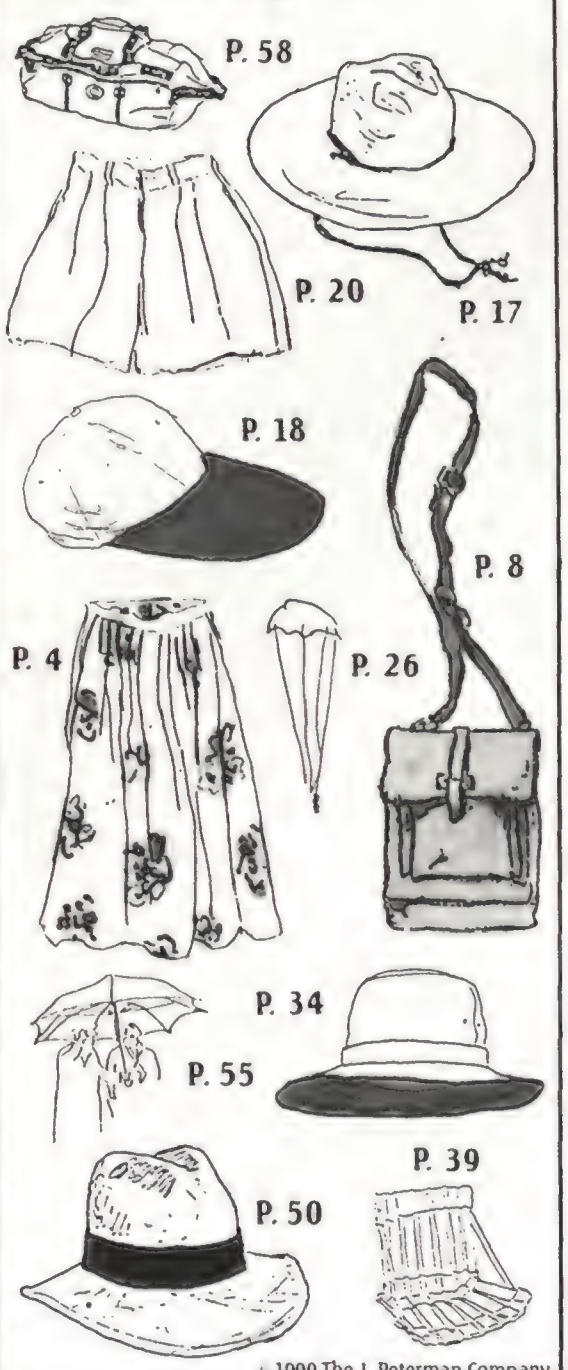

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discovery, has given way to a mood of concern, Terborgh said. The global environmental crisis has caught up with migratory birds. Eventually we will reach a new equilibrium but first we must pass through a transition. "I wouldn't want to make the call on whether elephants, tigers and birds will survive the transition. We shall be as helpless as sidewalk bystanders watching two cars collide."

There's a lot we don't know about how migratory birds spend their spring, summer and fall in North America, but there are whole volumes to be written on what we don't know about how birds spend their winters in the West Indies and in Central and South America. Some migrants fly one route going south, and a completely different one heading north the following year. Some species that eat insects in the summer eat fruit in the winter. Birds of the same species sometimes prefer different habitats on different islands in the West Indies: coffee plantations on one, second growth successional forest on another. The males of some species gather in one kind of habitat south of the border, while the females all go to one that is totally different.

Some tropical migrants are experiencing reproductive failure on their North American breeding grounds. The causes can lie in either hemisphere. Terborgh pointed out that in certain woodlots in Missouri, for example, only male ovenbirds are seen: there is no reproduction. No one knows why, but it could be that this is one of the species in which the two sexes choose different habitats on the tropical wintering grounds, and one of those habitats is being wiped out.

The causes of declines in some forest-dwelling migrants, however, are right here in North America. Much of the remaining Eastern forest is in fragments, some very small. And even though the "edges" where fields and forest meet have always been good places to look for birds, they have their drawbacks. Brown-headed cowbirds, denizens of open country, will penetrate several hundred yards into a wood to add their eggs to the nest of a host species. Scott Robinson of the Illinois Natural History Survey reported, for example, that in his studies around Lake Shelbyville, 100 percent of the nests of both thrushes and summer tanagers had been parasitized by cowbirds. He is studying 5,000 acres of oak-hickory forest, but the largest patch is only 175 acres. He also found that small predators, such as snakes and raccoons, took such advantage of the "edge effect" that 80 percent of the tropical migrants' nests were destroyed.

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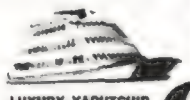

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After the final paper was read on a 20-degree Saturday afternoon, Luis Naranjo of the University of Valle in Cali, Colombia, read a statement from all the Latin Americans at the meeting. They argued that in a region where people are starving, it is not reasonable to stop the expansion of agricultural frontiers. Instead, they pleaded, "help us find ways to improve agriculture and development."

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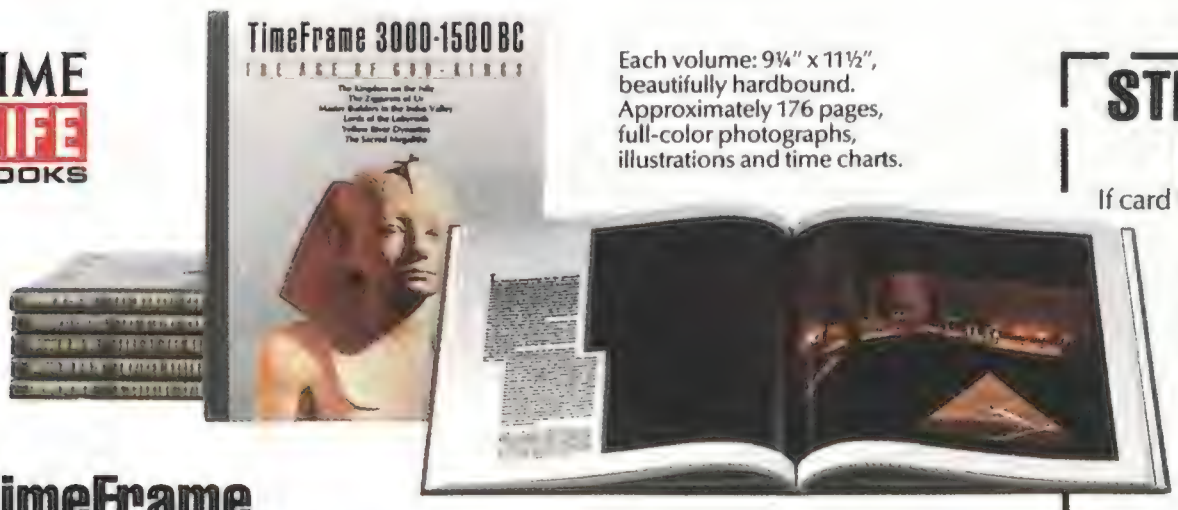

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must leave the field. Help on even the smallest scale would make a big difference. They asked that North American researchers consider Latin Americans for the temporary field assistant jobs advertised in the *Ornithological Newsletter.* Hiring them would give the North Americans contacts and access they would otherwise not have.

Most of all they asked for equipment, either to be left behind by North Americans or out-and-out donated: mist nets, calipers, scales, binoculars. Each Latin researcher at the meeting, Naranjo said, had lists of people in his or her country and the equipment they need.

Naranjo had at least one exchange in mind. "You can learn a thing or two from us," he offered; "Spanish, for example."

After Naranjo's plea, one of the Latin ornithologists asked whether the conference proceedings, to be published by Smithsonian Institution Press, would appear in Spanish as well as in English. The conference organizers said they did not know. That evening, however, during his formal address following the closing banquet, Smithsonian Assistant Secretary for External Affairs Thomas Lovejoy was interrupted with applause when he said he could "promise here and now" that there will be a Spanish edition of the proceedings.

Lovejoy pointed out that the tens of millions of bird-watchers in this country could be a potent political force and that they represent a large amount of money. Some of his listeners agreed, suggesting that state, regional and local bird clubs could "adopt" individuals and groups working in the Caribbean and in Central and South America. If our understanding of "our" birds is being thwarted for the price of a scale or a pair of binoculars, the solution would seem to be within our grasp.

Migratory warblers are not what the movie is about. Or as Jim Lynch said, migrant birds are not the best reason for fighting deforestation. But everything *is* connected to everything else. If it happens that it is warblers that move one segment of the population to action, so be it. Lovejoy ended his talk by saying that he saw no reason to change a statement he first made 18 months ago: all the great environmental battles will be won or lost in the decade we have just entered. What happens next in the movie depends, at least in part, on us.
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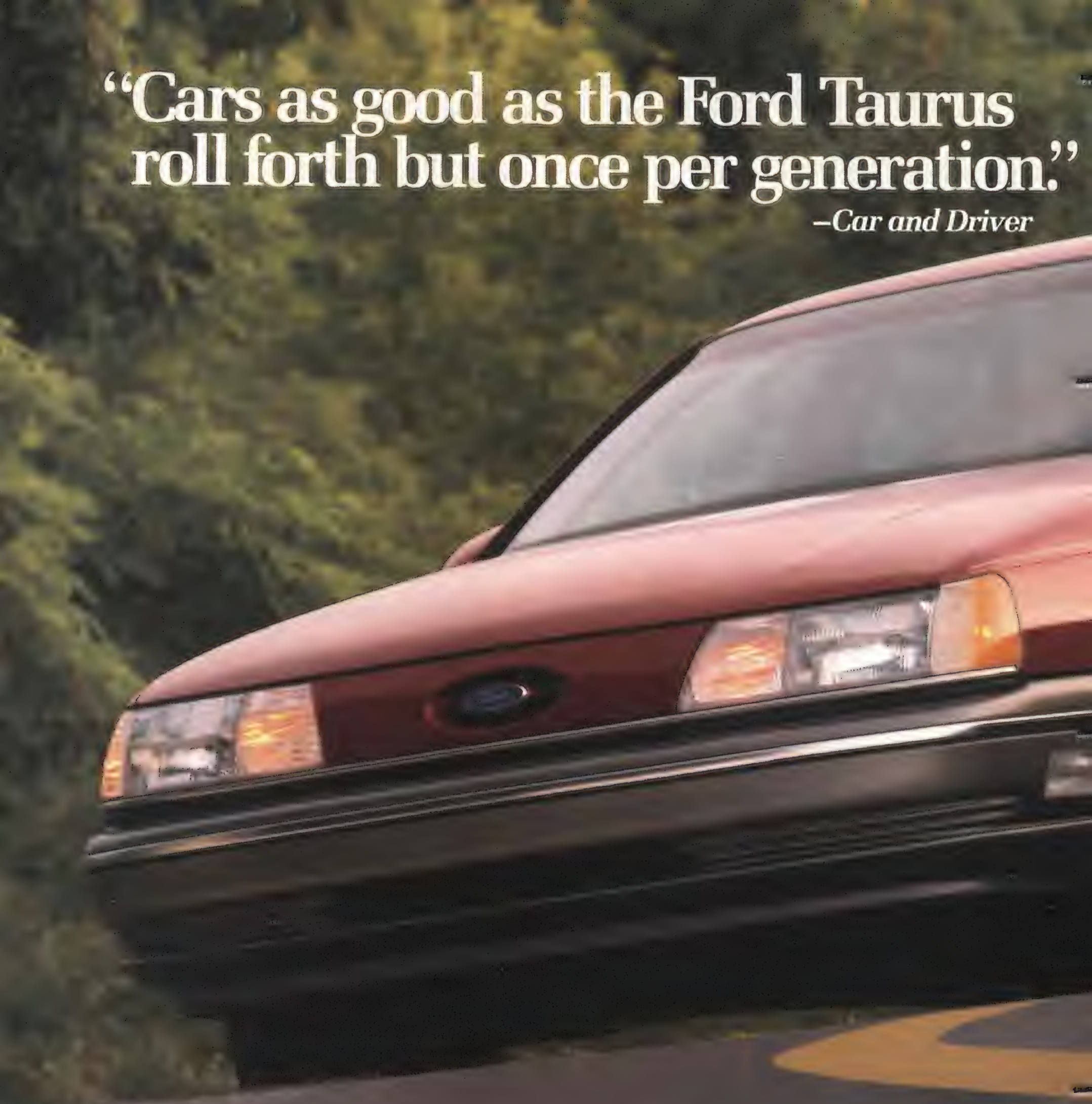

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By Stephen S. Hall

James Watson and the search for biology's 'Holy Grail'

A 15-year effort to map all the genes on every human chromosome begins this year, raising new hopes and ethical quandaries

When he first came to Cold Spring Harbor Laboratory in the summer of 1948, Jim Watson was a young biological Cassius, hungry to find an important scientific problem, preparing to hoist himself onto the shoulders of giants named Salvador Luria, Max Delbrück and Renato Dulbecco. Born in Chicago and raised in the shadow of its steel mills, the 20-year-old Watson was struck by the natural beauty and monied estates of Long Island's North Shore, but he was struck even more by the company it attracted. "There were only bright people here," he recalls, relief still evident in his voice. "The summer was dominated by—well, Dulbecco came with Luria and we did experiments, and it was exciting. You know, What was the gene?" In five years, Watson and Francis Crick would answer that question by discovering the structure of DNA. Biology has never been the same.

Now, nearly four decades after that seminal discovery, James Dewey Watson—an architect of his own career if ever there was one—has set off to fashion one final piece in the grand symmetry that marks his extraordinary life in science. Once a biological tourist at Cold Spring Harbor, Watson is now in his 22d season as director of the venerable laboratory, which this year celebrates its centennial. And at age 61, when he could have maintained respectability merely by collecting his honorary degrees, Watson has taken on a project sometimes called "biology's moon shot." Known as the Human Genome Initiative, it aspires to identify and map every gene in our chromosomes, parsing DNA's "grammar of life" down to its biochemical sentences, words and letters. "Never will a more important set of instruction books be made available to human beings," Watson vows. And never will a more appropriate set of bookends frame a scientist's career.

Arguably the best-known biologist in America, winner of the Nobel Prize in 1962, famous for his best-selling science memoir, *The Double Helix*—infamous for its breezy, abrasive style—Watson has played a major role in shaping the direction of biological research since the 1950s. He had absolutely nothing to prove when, in 1988, National Institutes of Health director James Wyngaarden asked him to coordinate NIH's effort in its massive and controversial project. So why did he agree to do it?

Watson considers the question only briefly. He is no longer the skinny, leering lad of the archival photographs, with the exaggerated grin and flip of hair straight out of the Social Realists, cousin to one of Edward Hopper's loners or Thomas Hart Benton's earnest Midwestern string beans. The hair is gray and thinner after all these years, but still wild, tufted like pulled cotton; the voice soft, yet hectic. "No one else wanted to do it," he replies, arching his eyebrows. "And someone had to."

That's not the real reason, of course. Since that first summer at Cold Spring Harbor, Watson has instinctively drifted toward the key questions of biology, and for the past 35 years those questions have danced around the maypole of the double helix. The genome project promises a kind of culmination: complete explication of the molecule. So he commutes to NIH headquarters in Bethesda, Maryland, two days a week and wows Congressional committees with his outspoken, oddly patriotic view of the initiative, and has assumed highly visible leadership of a project that will cost about $3 billion, take 15 years and, it is argued, revolutionize biomedicine in the 21st century.

Heading search is James Watson who, with Francis Crick, discovered that gene is a double helix of DNA.

Photographs by Peter Menzel

At Harvard in 1962, Watson displays model of DNA's double helix, called at the time the "secret of life."

For Watson and the generation of biologists who initiated this grand intellectual crusade, the genome—the genetic blueprint of the organism—is the final prize. Walter Gilbert, a Nobel laureate who worked with Watson in the early '60s at Harvard, calls the genome the "Holy Grail" of genetics. Norton Zinder of Rockefeller University prefers the "Rosetta stone."

What makes this chapter of Watson's story particularly intriguing is that he has placed himself at the crossroads of great social and scientific controversy. Many fear the genome project will destroy the "small science" feel of biology and divert funds from worthy research. Even Watson's old mentor, Salvador Luria, has blasted the venture as a pet project of a "small coterie of power-seeking enthusiasts" who may be leading us into a "kinder, gentler program to 'perfect' human individuals by 'correcting' their genomes. . . ."

The genome project promises great strides in the diagnosis and treatment of disease, but that sunny picture trails clouds of heavy social weather: the possibility of eugenics, of abuses of genetic privacy, of human tragedy inherent in diagnosing fatal diseases without being able to treat them. Without question, the project will take abstract medical, legal and ethical dilemmas and dump them upon nearly every hearth and home. Ironically, the only scientist with enough power and visibility to influence the ethical climate in which this new genetic future is forged may be James Watson. So when he says, "I may have to visibly take the heat," he might be alluding not only to the current controversies, but ultimately to how history views his overall stewardship of the project.

"You really want to get the problem solved"

"His dominant moral value," says one associate, "is good science." As a good scientist, Watson believes, "You really are curious about the laws of nature, and you want people to understand them. If you can help in that, that's great. But you really want to get the problem solved and not your own reputation furthered." He pauses to give a short laugh. "I enjoy myself most," he says, "in the company of people whom I find brighter than myself, rather than the other way around." Even more than place, home for Watson has always been the company of such people.

He was born on April 6, 1928, into what he describes as a "poor family" on the South Side of Chicago. His Episcopalian father was a bill collector ("It was an awful job," Watson says; "he would have been better as a schoolteacher, but he never ended up that way"). His Scotch-Irish mother, a Catholic, worked as a secretary at the University of Chicago and served as a Democratic precinct boss. Watson's childhood was shaped by the Great Depression, not just its poverty but its embrace

Cold Spring Harbor Laboratory, led by Watson for more than two decades, is century-old research center. It has been a leader in cancer and virus research, and under Watson's hand, helped shape the genome project.

of public service, its New Deal populism, and its model of forceful and charismatic leadership in the person of Franklin Roosevelt, whose name often pops up in Watson's conversation. But one of his earliest conflicts, no doubt, was reconciling that populist sentiment with the estranging brilliance of his own intellect. As a child, he was small, unathletic, bookish and, one gathers, as prickly and undiplomatic as he is known to be today. "I wasn't a popular kid," he recalls, "and I suspect it was because I would generally say something which I thought was true. In those days, I used to think manners were terrible, you know. The truth was important and manners often hid the truth." He expectorates one of his laughs, as if what he has said is so obvious there was hardly any reason to say it at all.

He sought the company of adults and the comfort of adult activities, especially reading. His father, a voracious reader, also introduced his son to bird-watching. With his mother, Watson argued the relative importance of nature versus nurture (young Watson, a self-described "leftist," recalls that he argued the side of environment, while his mother championed heredity).

As a youngster, Watson competed on the *Quiz Kids* radio show; he lasted three sessions before tripping up, he claims, on questions about Shakespeare and the Old Testament ("If I'd known the religious questions," he has said, "my father would have been angry at me"). He attended the University of Chicago high school, graduated at age 15 and earned a degree in zoology at the University of Chicago in 1947, before pursuing graduate studies at Indiana University.

Bird-watching acquainted Watson with the beauty of nature; Erwin Schrödinger's book *What Is Life?* introduced him to life's central mystery. Schrödinger described the gene as the crucial entity in the study of biology; unfortunately, in the 1940s no one knew exactly what a gene was, what it looked like or how it worked. As he has done throughout his career, Watson smelled its importance and attached himself to a fraternity of brilliant men—it was always men—hot on the trail of the central question.

The story of the discovery of the structure of DNA is told in unforgettable fashion in Watson's racy and candid memoir, *The Double Helix*. Armed with his PhD, at age 21 he headed off to Europe to find the gene. He worked first in Copenhagen on a Merck fel-

Stephen Hall is a freelance writer living in New York City. He last wrote for SMITHSONIAN *on the links between molecules, emotions and health, in June 1989.*

lowship, then grew bored with biochemistry and decided the answer was best pursued at the Cavendish Laboratory in Cambridge, England. His training in genetics complemented the strength of Cambridge, where the British enjoyed a reputation for using x-ray pictures to determine the three-dimensional structure of important molecules, and so he was uniquely positioned to solve the problem. "I was as trained to find the structure of DNA," Watson has since observed, "as Prince Charles is trained to be king."

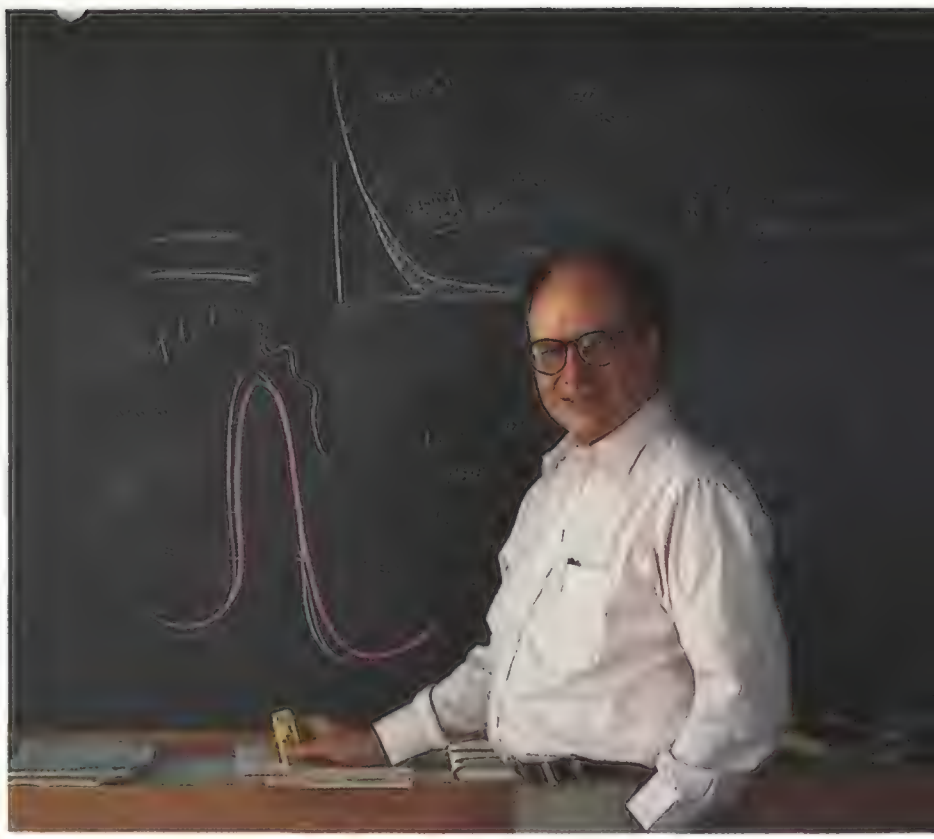
In Cambridge, Watson teamed up with the 35-year-old Francis H. C. Crick, a scintillating intellect with hardly a credit to his threadbare academic resumé. "Jim and I hit it off immediately," Crick wrote in his recent autobiography, *What Mad Pursuit*, "partly because our interests were astonishingly similar and partly, I suspect, because a certain youthful arrogance, a ruthlessness, and an impatience with sloppy thinking came naturally to both of us." Crick noted that "Watson was regarded, in most circles, as too bright to be really sound." These two bad boys of biology—arrogant, opportunistic, behaving "insufferably" in Crick's estimation—puzzled their way to success without performing a single experiment. With the American chemist Linus Pauling as a rival, Watson and Crick used x-ray pictures of DNA, produced by Rosalind Franklin and Maurice Wilkins of King's College in London, to divine the shape of this most central molecule. By the spring of 1953, they had determined that it was a double helix; by 1962, Watson and Crick—with Wilkins—had their Nobel Prize.

The self-confidence to think big

It is tempting to view everything that followed as anticlimax, yet Watson reinvented his role in science in the '60s. He stopped being an experimentalist and started being an impresario, a "mover of people." He grabbed the compass and charted the course of research. He attracted grant money. He recruited young talent, mindful of the soil in which he himself flourished. "I think it's important that you establish conditions where people will really become important early in life," he says, "because it gives them the self-confidence to think big."

That process began in earnest at Harvard University, where Watson took an assistant professorship in 1955, and continued at Cold Spring Harbor, where he assumed the directorship in 1968. That same year, at age 39, he married Elizabeth Lewis, his 19-year-old laboratory assistant. Watson and his wife moved into the 19th-century Airslie House, a hilltop mansion once owned by Louis Comfort Tiffany, where they have raised their two sons, Rufus and Duncan.

When he sat down to write his account of the discov-



Nobelist Walter Gilbert, who worked with Watson at Harvard, was among first advocates of genome project.

Charles Cantor heads one of Department of Energy's genome labs, developing techniques for mapping genes.

Geneticist Leroy Hood puts chromosome fragments in lab device that separates them by size for mapping.

Jonathan Beckwith of Harvard Medical School, a critic of genetic technologies, is on Watson's ethics panel.

ery of the structure of DNA, Watson began with an enigmatic anecdote about a fellow scientist who apparently snubbed him one day simply by asking, "How's Honest Jim?" It adverts, Watson says, to the belief that Watson and Crick pirated Rosalind Franklin's x-ray data en route to their discovery. "You know, 'Honest Jim' was the name you'd give to a used-car salesman," Watson admits now. Yet he adopted it as the title of the manuscript he began to circulate privately; published in 1968 as *The Double Helix*, its disparaging and sometimes damaging tone caused a firestorm of controversy even as it climbed the best-seller charts.

Still known for speaking his mind, Watson has not disappointed his critics in his first year as genome czar at NIH. He has talked about divvying up the 23 pairs of human chromosomes and assigning them to different countries (that trial balloon was roundly booed down). He has criticized Japan's reluctance to commit money to genome research and has threatened to withhold data (he told a recent gathering of scientists, "I am for peace, but if there will be war, I will fight it!"). He attacks European scientists as "a bunch of idiots" for declining to publicly discuss the ethical implications of genome research.

Watson has been "something of a wild man"

The journal *Science* recently observed, "To many in the biological community, [Watson] has long been something of a wild man, and his colleagues tend to hold their collective breath whenever he veers from the script"; one former Cold Spring Harbor board member remarks that Watson has perfected the use of "petulance as a management tool." But colleagues argue that there is always strategy behind his antagonistic style. Watson himself says, "I would not dare take this on unless I thought I had the support of the major people doing it. I don't make unilateral decisions."

It is precisely Watson's candor and integrity, and his willingness to take the heat, that have earned that support. "If it were not Jim—if it were headed by an ordinary person—then I believe the project would not have acquired the degree of acceptance that it has in the scientific community," says David Botstein, a vice president of Genentech and probably the project's most articulate and longstanding critic. "I'm convinced he's the right person in the sense that he is the person who scientifically carries the most credibility for this project," agrees Sydney Brenner of the Medical Research Council in England. "Jim is actually *the* heroic figure of science, in terms of the whole development of this area."

To contemplate the enormousness of the task, consider a freckle on the back of your hand. The average freckle contains several thousand cells. Each one of

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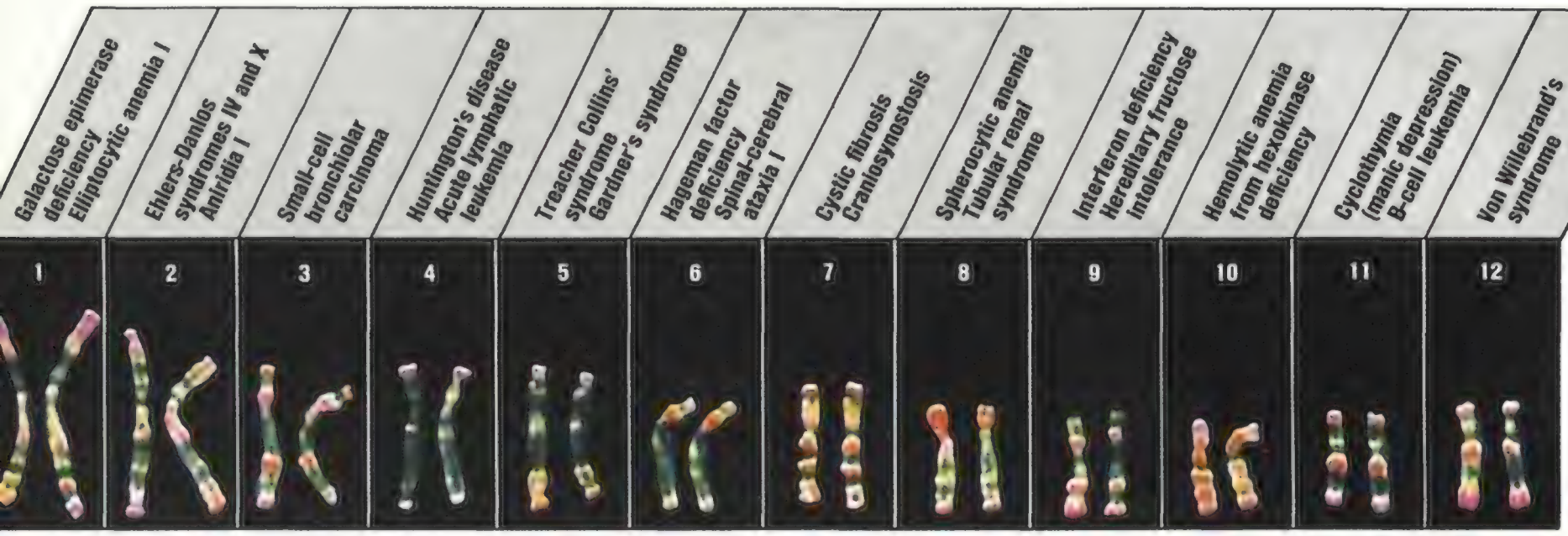


All 46 chromosomes (23 pairs) of human male appear in this chart; a female would differ only in having two X chromosomes instead of X and Y (opposite). Above are listed some of the diseases associated with each pair.

those cells contains 23 pairs of chromosomes. The amount of DNA in each bundle of chromosomes, if unfurled, would form an invisible thread reaching about six feet in length. Interspersed randomly along that six feet of information are somewhere between 50,000 and 100,000 genes. What biologists now propose to do is to locate each one of those genes, pinpoint its specific location on a specific chromosome (a process called mapping) and ultimately decode the biochemical information down to the so-called "letters" of inheritance, the four basic constituents (referred to by their first letters—A, C, G and T) of all genes. In the double helix these letters are linked in pairs, whose sequence on a gene makes it different from any other. These sequences involve 3 billion pairs in all; to date, biologists have deciphered about 35 million.

Yet the genome project commences at a time when there is not enough money to fund much deserving basic research, and Watson seems to view the initiative as an opportunity for biologists to reposition the field. "I think the genome is a way of actually focusing medical research," he says. "I think American biomedical research is in a crisis generated by its own success. There are too many good things to do, and it's been enormously successful from the viewpoint of basic science. But except for the help that it's given to AIDS—finding the virus, getting the test for the blood—it hasn't had any major obvious impacts on too many people's lives. And it isn't curing AIDS. I think that many major diseases will be understood when we can get their genetic basis. And I think we may have to produce another Salk vaccine or something like that, so people can see that the implications are worth it."

Watson has two priorities: to bring the project home under cost and to identify key genes related to human disease. An estimated 4,000 human diseases have a genetic component. Some diseases, like sickle-cell anemia, stem from a single misplaced letter in a single gene; in other illnesses, like hypertension, diabetes, some cancers and heart disease, there is an ensemble of genes playing a dissonant chord together.

Since 1911, when color blindness was linked to the male X chromosomes, biologists have plodded through the genome in search of genes linked to human disease, but the work has exploded in the past decade. In August 1989, for example, teams from the University of Michigan and Toronto's Hospital for Sick Children announced the isolation of a gene whose malfunction causes cystic fibrosis, which afflicts 1 in 2,000 newborn children. The discovery exemplifies the power of modern genetics, but also the limitations. Finding the gene does not guarantee finding a cure (the genetic glitch of sickle-cell anemia has been known for 15 years, but no cure is in sight). During the past five years the Cystic Fibrosis Foundation has spent $120 million trying to locate the gene. It is being argued that spending about $200 million a year over a 15-year period for the whole genome will be more cost-effective, and more egalitarian, in locating *all* human genes.

Watson believes that maladies like schizophrenia, alchoholism and Alzheimer's disease might yield the first fruits of the genome project. "We have to get some real results in the next five years," he says. "I mean, better maps to human disease genes. I think you should have goals like that. Find the gene for something which you might not have found if you didn't have the human genome mapped. If you want to understand Alzheimer's disease, then I'd say you better sequence chromosome 21 as fast as possible. And it's unethical and irresponsible *not* to do it as fast as possible."

While many diseases have been tied to particular pair of chromosomes, few have been linked to specific gene. Success in mapping genes on all the chromosomes could be a major step in finding cures for many diseases.

Over the past decade, scientists like Charles Cantor (who leads one of the Department of Energy's three complementary genome centers) at the Lawrence Berkeley Laboratory in California have developed sophisticated techniques of genetic cartography, organizing chromosomes into manageable districts just as states are divided into counties. Leroy Hood's lab at Caltech, meanwhile, has developed an automated sequencing machine that can read out 7,000 letters of DNA in a day. Hood's lab is also working on a computer scanning system that can search and read 30 million genetic letters in three seconds. Watson plans to designate three genome centers in 1990 to centralize this type of technology development. In the meantime, researchers will hone their mapping and sequencing techniques on other organisms—bacteria, yeast, a tiny worm, the good old fruit fly, mice and perhaps even a plant—to study similarities between species.

Still, the technical obstacles are complex, as are the analogies invoked to describe them. Eric Lander, a geneticist, describes it this way: "It's as if I took six sets of the *Encyclopaedia Britannica* and shredded them, and spread the pieces all over the floor, and asked you to reconstruct the books. How do you do that? You look for pages that overlap, so you need multiple copies of the books. You would spend a year or two or three just gluing these copies together in the correct order. And then you have to read the thing. *That's* the genome project." Once the encyclopedia is in hand, Watson adds, "we will be interpreting it a thousand years from now."

Just how rapidly progress is being made was apparent in October of last year, when some 800 biologists jammed a hotel ballroom in San Diego for a meeting called—with the promise of many sequels—"Human Genome I." To the degree that technology drives science, one could hear the genome project's motor racing. Indeed, Watson declared that the 15-year project would officially begin October 1, 1990. But the San Diego gathering typified scientific meetings in another respect: in two and a half days of talks and presentations, exactly 30 minutes was set aside for the discussion of the project's social implications.

Of all the hats Watson will wear as genome project leader, none would appear more ill-fitting at first, or more important, than that of moral ombudsman. Watson is not visibly comfortable with "the ethics thing," as he once termed it; and when it is suggested that, by virtue of his fame and influence, his opinions on ethical issues will likely carry disproportionate weight with Congress and the public, he recoils from the notion like a child ordered to eat peas. "I can't do that," he demurs, "because I'm not, you know, a real player."

His visibility and credibility, however, make him the major player. Protestations notwithstanding, Watson has already taken a surprisingly aggressive fiscal stance to insure that ethical issues get a full public airing. He has declared that 3 percent of the NIH project's budget—over 15 years this portion could approach a substantial $90 million—must be devoted to study and research on the ethical implications of mapping the human genome. That outlay may represent the largest targeted funding of biomedical ethics in the modern era.

"The fact that Watson opens his mouth and utters the word 'ethics' changes the whole valence," says Nancy S. Wexler of Columbia University, who heads NIH's working group on ethics for the genome project. "Other people start to think, 'Gee, this must be important. This is something we should pay attention to.'" Biologist Maynard Olson of Washington University,

In Hood's lab at Caltech, computer screen displays fragments of a gene that have been separated to determine the sequence of their basic "letters." The order of fragments' chemical letters is analyzed and displayed at the right.

a member of NIH's Genome Advisory Board, calls Watson's commitment of money for studying ethics "a courageous and precedent-setting position to take." And it is not universally applauded among his colleagues. One of Watson's closest associates observes, "There is a vigorous debate within the genome scientific constituency about the wisdom of supporting ethical, legal and social analysis, and if you took a vote, my guess is that it would be 60-40 or more against Watson. So it is all the more remarkable that he would stick his neck so far out."

Watson has stacked his ethics committee with, if anything, thinkers who have been historically attuned to misuses of scientific knowledge. Its members include Jonathan Beckwith of the Harvard Medical School, a thoughtful critic of genetic technologies; Patricia King, a bioethicist at Georgetown University; Robert F. Murray jr. of Howard University, an expert on the early abuses of genetic screening for sickle-cell anemia and the potential of such programs to feed racial prejudice; and Nancy Wexler, a neuropsychologist who faces the consequences of genetic screening because Huntington's disease, which is invariably fatal, runs in her family. The group's mission, Wexler says, is to "anticipate now the abuses that *can* occur and then prevent them *before* they occur."

Genetic screening is nothing new, as scientists are quick to point out, but the genome project will generate hundreds of disease-related tests, and the sheer volume means that prenatal testing and genetic diagnosis will probably touch every life. Scientists promise a new age of medicine, when doctors will use the genetic profile of newborns to detect genetic susceptibilities to disease and will prescribe preventive steps necessary to forestall illness later in life. But such advance knowledge also invites misuse.

Will employers demand human genetic screening before hiring? Will insurance companies demand genetic profiles of its clients and centralize the information? Will insurers decline to pay medical expenses if a fetus with a lifelong genetic disability is brought to term? Will law enforcement agencies seek access to genetic information? (The FBI already maintains a DNA databank on criminals.) How will doctors counsel a family in which medical science can diagnose a fatal illness, like Huntington's disease, but to whom it can offer no cure? And with a complete catalog of genes at our disposal, will we be able to resist the temptation to tinker with genes, not only to cure disease in individuals (somatic-cell gene therapy) but also to rewire family genomes by retooling germ-line, or reproductive, cells? The groundwork for this type of genetic reengineering is already being laid. "We must not shy away from the germ line," declared *Science* editor Daniel Koshland at Human Genome I.

What Watson tells his colleagues about all this may

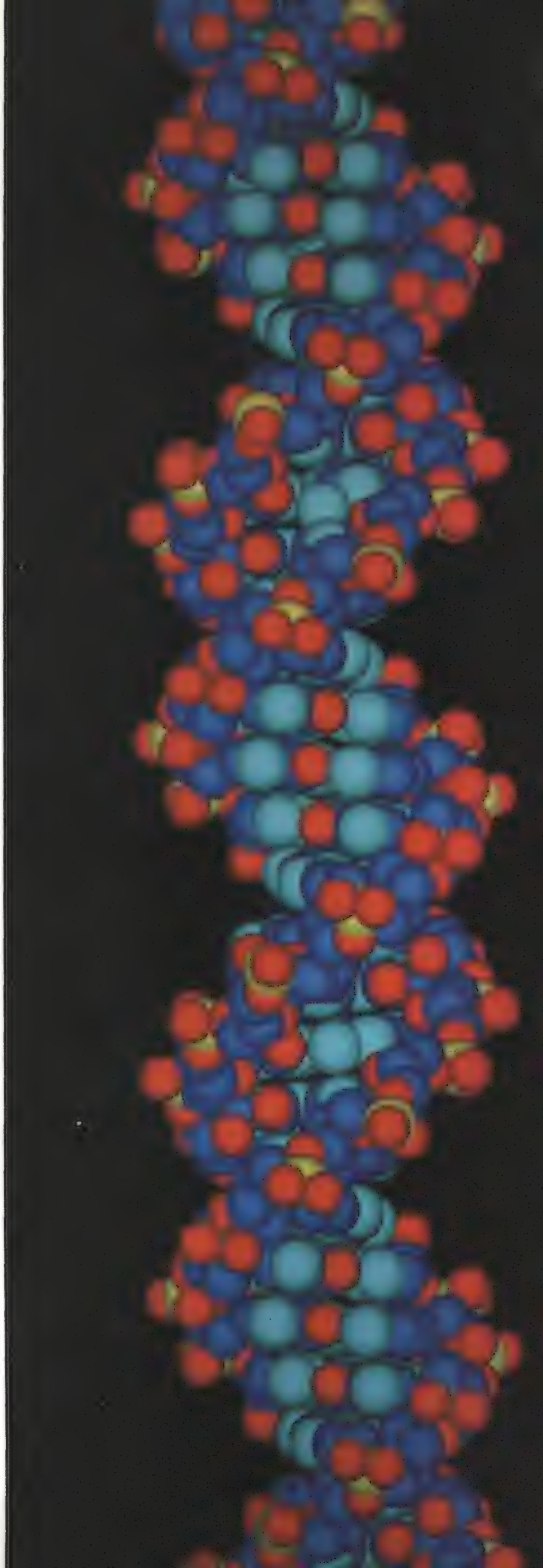
be more important than what he tells an interviewer. Here is what he said in San Diego: "It would be naive to say any of these answers are going to be simple. About all we can do is stimulate the discussion, and essentially lead the discussion instead of having it forced on us by people who say, 'You don't know what you're doing.' We have to be aware of the really terrible past of eugenics, where incomplete knowledge was used in a very cavalier and rather awful way, both here in the United States and in Germany. We have to reassure people that their own DNA is private and that no one else can get at it. We're going to have to pass laws to reassure them. [But] we don't want people rushing and passing laws without a lot of serious discussion first."

Can Watson foresee the misuse of genetic material in our society, perhaps 50 or 100 years down the road? "Sure," he replies. "That's why I'm talking about laws. But I think you see a misuse of everything. You see a misuse of pesticides. You see a misuse of high school athletics. You see a misuse of aspirin, of automobiles. So I don't think it should make us upset to say that there will be a misuse."

And when he is asked about what area in the future may be the ripest for misuse of genome information, Watson pauses a long time, hands clasped over his head, and uncharacteristically sidesteps the question. "I don't have a good feeling for where it could be misused the most," he says. And later: "I think people can't really think about things before they are *real*."

Here, the scientist vies with the New Deal populist. "We're a democracy and the people finally make their decisions," says the populist. "If some process is regarded as repulsive to a majority of the people, we better know." Pause. "Now," adds the scientist, "one hates to have something discovered that's considered repulsive, unless it's been talked about enough to know whether it really *is* repulsive."

Watson has a better record at looking forward than he allows. In 1971, in an essay for the *Atlantic* called "Moving Toward the Clonal Man," he warned of the coming dilemmas of reproductive technologies and argued against what he termed the "laissez-faire nonsense" that science inevitably makes the world better. Test-tube babies, *in vitro* fertilization and surrogate parenting sounded futuristic back then, as some of the genome's potential dilemmas sound in 1990. But as "Honest Jim" wrote in 1971, ". . . if we do not think about it now, the possibility of our having a free choice will one day suddenly be gone."



Computer model shows DNA's double helix, Watson's first quarry; now his quest is the entire human genome.

It will look even better on the next page.

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You have to drive it to believe it. The new Accord. HONDA

The legendary photographer and art dealer Alfred Stieglitz made this portrait of John Marin at work in the back room of Stieglitz's 291 (Fifth Avenue) gallery circa 1912, three years after Marin's first show there.

By Helen Dudar

To John Marin, art became 'a sort of mad wonder dancing'

Painting furiously, equally at ease with either hand, the artist was intent on getting down to the very essence of all he perceived

National Gallery of Art

Marin heard "great music being played" in 1912 series of watercolors of New York's Woolworth Building.

In 1948, *Look* magazine polled America's art critics and major artists, among them Edward Hopper, Stuart Davis and Charles Burchfield, for a consensus on the creative spirit who could be pronounced the best of the age. It is a fair measure of the art establishment's limited attention span that a generation after John Marin was crowned prince of painters by his peers, his name had begun to fade. New styles raced in to seize the interest of the gallery and museum worlds; fashion embraced Abstract Expressionism, then thrilled to the distancing imagery of Pop Art and later, for about five minutes, went gaga over a frail phenomenon labeled Op Art. To be sure, Marin's death in 1953 was the occasion for lavish obituary tributes. But mention him today to a reasonably literate American or a cultured, well-traveled European and, likely as not, the response will be a puzzled stare.

That is not only odd but hard to understand. Marin's legacy embraces more than 3,000 works, many of them memorable. There are prime etchings, splendid if demanding oils and, in the main, watercolors—2,500 of them, amazing in their color, design and complexity. He seemed to have set down everything in a transport of excitement, as if he were recording themes for a fevered gavotte. Indeed, he once wrote of the acts of drawing and painting as "a sort of mad wonder dancing." In large part, Marin painted sea and sun and mountain and, close to home, he painted New York's sky-piercing towers and frenetic streets. All of these elements became not so much subjects as touchstones, symbols of the restless, disordered surge of life. In a Marin painting, everything is in motion.

With or without brush in hand, Marin seemed to respond in bursts of devouring energy to anything that seized his attention. Lawrence Fleischman, a major Marin collector, who became a friend of Marin in the artist's last years and, ultimately, the prime New York dealer in his work, remembers that a stroll down a city street with him generally was transformed into an exercise in imaginative looking. Pronouncing judgment on buildings he liked and buildings he found wanting, Marin would invest each with a personality. As he walked, he talked; he defined them and drew them, splintering the air with long, elegant fingers.

To watch him before his little portable easel was to be witness to a rarer performance—Marin working with equal ease with either hand. Allowed to observe him sketching a New England sunset one day, a Marin biographer, MacKinley Helm, saw him rough in the images with the black crayon in his right hand and then, with furious strokes, lay on the colors with the brush in his left. "His hands fought each other over the paper as they had done while he played the [Bach] *Two-Part Invention*," Helm wrote. Marin was a devout music lover—his summer refuge in Maine lacked indoor plumbing but sheltered a Chickering concert grand—who was nearly as passionate about the works of the classical masters as he was about capturing and distilling his surroundings. "I try to make the parts of my pictures move," he once said, "the same way [as Haydn,

Private collection

Marin came to Paris in 1905, soon etched *Pont Neuf, Paris,* which showed signs of Whistler's influence.

Bach and Purcell, who] gave their music real action."

The work and the spirit are celebrated, from January 28 through April 15, at the National Gallery of Art in Washington, D.C., which is mounting the first major Marin museum exhibition in 20 years.

In those two decades, there have been several modestly scaled museum shows, and every year since 1981, Fleischman's Kennedy Galleries, which represents the Marin estate, has assembled a thematic exhibition ("John Marin's Autumn," "John Marin's Mountains," "John Marin's Oils" and so on). But the National Gallery tribute surveys an entire life in art. Its 143 pieces start with a Paris etching of the Pont Neuf done in 1905 (left), the sort of nostalgic scene that brought Marin a supply of francs and some attention when he was living in Paris; they end 47 years later with a 1952 oil, *The Written Sea* (p. 62), whose jaunty calligraphic lines are a startling evocation of the art that Jackson Pollock had been developing.

In addition, the National Gallery owns the equivalent of highly personal diaries: his sketchbooks. In 1986, John Marin jr., his only child, presented the museum with a sumptuous gift—dozens of paintings, unpublished letters, memorabilia and 16 slender, time-battered volumes in which, for a half-century, the artist had in a few deft strokes recorded images, scenes and landscapes that needed remembering. Some of the books, each opened to a telling little sketch, will be displayed in the exhibition.

The show has been assembled by Ruth Fine, the National Gallery's curator of modern prints and drawings, who traveled the country hunting down forgotten or little-known examples of Marin's work. In his lifetime, Marin's art, particularly the watercolors, sold well and widely, a degree of popularity that may have helped guarantee his fall from favor after his death.

A Marin in every major city

"I don't think there is a major city in America where a watercolor is not to be found," Fine reported. "I would be in one house in a Midwest city and would be told by the owner, 'You know, so-and-so down the street has two Marins.' I would arrange a visit to the neighbor down the street and find other beautiful pictures. Many Marin paintings were not recorded."

The sensibility that conjured up this beauty was an intriguing blend of radical and petit bourgeois. As an artist, Marin was among the earliest of American modernists, and his series of watercolors of New York's Woolworth Building exhibited at the famously infamous 1913 Armory Show—reeling skyscrapers, tilting perspectives—shocked the critics nearly as much as the unnervingly new European entries. "Mr. Marin's ideas," grumbled one faulty judge of the looming fu-

National Gallery of Art

John Marin's great creative ability to capture both the energy and the essence of scenes in nature that intrigued him is apparent in oil *Grey Sea*, 1938, at right, and, more abstractly, in watercolor *Movement, Sea and Sun*, below, which was done earlier, in 1921.

Dorothy Norman

ture of American art, "seem to have spoilt a good artist in the making."

As a husband and father, Marin lived a life of singular regularity. He had one wife and, as far as anyone knows, no extramarital entanglements. No one ever saw him down more drink than was good for his speech or balance. His idea of fun was a good game of billiards. For much of his married life, Marin wintered and worked in a drab house in a drab neighborhood in Cliffside Park, New Jersey. Summers nearly always meant Maine, whose landscape and ocean vistas absorbed and obsessed him.

An old-fashioned modern artist

Marin's work eventually supported him adequately, without providing the kind of rich lifestyle that successful artists of our day have come to enjoy; but then, his needs appear to have been uncomplicated. He favored vintage pre-World War I suits, and shirts with starched collars, and his wife cut his hair in the kind of inverted-bowl style that did not become fashionable until the Beatles rose to fame. He looked, someone once said, like an amalgam of Yankee lobsterman and old fairy-tale wizard. Marin's only consumer lust was a taste for spiffy cars, which he maneuvered with terrifying ineptitude. On one occasion, he came close to forging a drastic alteration in a major chapter of 20th-century American art: in 1924, driving Georgia O'Keeffe and Alfred Stieglitz from their wedding ceremony, at which he had been a witness, he distractedly misdirected his touring car, sideswiping a grocery truck and spinning across the street. He ended up against a telephone pole. Fortunately no one was hurt.

The contrast between the art and the man who made it was extreme, fascinating and a trifle baffling. Marin's pictures were daring, the work of a sophisticated eye, an unfailing imagination, a virtuoso hand; some of them verge on elegant abstraction, although he looked down on abstract art. He hated efforts to interpret his art—or for that matter, anyone else's. The attitude is not uncommon to artists, particularly American artists, but Marin's distrust of the critical and academic establishments verged on the fanatic. "Intellectuals," he once pronounced, "have in their make up a form of Nazism."

Marin himself spoke in a rustic Old Yankee vernacular and wrote as if he were Walt Whitman's natural heir. His sentences were flavored with quaint expressions like "high cockalorum," "humdinger," "scalawag" and "crackerjack." His letters and catalog commentaries—admired, collected and published in his lifetime—ranged from homespun shrewd to arch. "I am a Small town Gink with a small town disposition," one of his commentaries began. "Don't everlastingly

Harvey and Françoise Rambach

read messages into paintings," he commanded another time, "—there's the—Daisy—you don't rave over or read messages into it—You just look at that bully little flower—isn't that enough!" In Marin's mind, what drove him to paint was basic, an emotion that he found poorly distributed among his contemporaries: "Those the topnotchers of France—your Picasso—your Bracque—Miro—Leger—Matisse—Their ability I recognize—but for me they everlastingly lack love."

Everything that came from Marin's loving hand radiated spontaneity. Here, it appeared, was a natural, creative spirit, a lucky man who was freed, rather than constrained, by his magnanimous imagination. In truth, hardly anything Marin turned out was unre-

Helen Dudar wrote on Man Ray in December 1988, on the Art Institute of Chicago in August 1988 and on David Hockney in February of the same year.

At work in the wild, Marin was photographed by Paul Strand in Twining Canyon, New Mexico, in 1930.

The country that Marin painted out West is shown here in *Autumn, New Mexico*, a watercolor from 1930.

hearsed. The letters, with their blithe disregard for punctuation, were discovered to be the results of many drafts. The pictures hinted at impetuosity, the artist struggling to convey the "warring, pushing, pulling forces" of his surroundings; as often as not, they were studio works, sometimes painted from on-the-spot sketches, at other times, more impressively, from an extraordinary visual memory. Once, driving through New Jersey hill country with his son, Marin stopped the car and gazed for a while at the landscape, without recourse to paper or pen. The next day, he recorded the scene in oil and showed it to John Marin jr. "That's what I was looking at yesterday," the artist said.

John Currey Marin's life began in sadness and proceeded through a prolonged boyhood. "I was a kid until I was 30," he once said. His mother died nine days after his birth in 1870 in Rutherford, New Jersey, and he was sent off to be reared by her family: a set of grandparents, an uncle and two unmarried aunts in Weehawken. The need to draw, the compulsion to discover his surroundings in line and color, apparently surfaced by the time he was 7 or 8 years old.

Marin's father was a public accountant, and traditional efforts were made to settle the son into a respectable trade. He sold sewing notions for a wholesale house for a while without conspicuous success. He tried building design for a few years, learning his way around a succession of architects' offices; he actually built a half-dozen simple frame houses in Union Hill, New Jersey. He painted on Sundays, and after the architecture venture collapsed, he painted daily until the family agreed he might as well go to art school. For the next two years, he was at the Pennsylvania Academy of Fine Arts and later studied at the Art Students League in New York City. In 1905, at the fairly advanced age of 35, still dependent on remittances from his father and

Private collection

Even in a sketchbook Marin could produce finished, exciting works, as in *Autumn Color*, done in 1952.

aunts, Marin went off to the artistic ferment of Paris.

His stay abroad lasted for the better part of five years; its impact on him was as shrouded in ambiguity as almost everything else we think we know about him. It was a yeasty time in Paris: Cézanne was being celebrated; Picasso, Braque and a horde of moderns had burst upon the scene. Marin lived on the Left Bank, where galleries showed the new artists and the citizenry surely sat in the Dôme café talking about them. His own work found a place alongside that of Matisse, Vuillard, Cézanne, Signac and Robert Delaunay in a number of annual group shows. But in his "I'm-just-a-regular-guy-who-paints" stance, he always insisted he took scant notice of the new art. He concentrated on turning out romantic Whistlerian etchings, for which there was actually a market, but he also began to find his own way. What did not sell at that time were the pictures he attacked with a fresh, stabbing energy, "wild free things" set down in a kind of pictorial shorthand that made traditionalists nervous. As he later put it, he "played around" with patches of color. Did the experts see traces of, say, Cézanne in some of the work? Marin would insist he never confronted a Cézanne—or any of the other moderns, for that matter—until he returned home in 1911. It is not easy to find a critic or an art historian who believes this.

In 1908, Marin met Edward Steichen, pioneer of American photography, who was in Paris trying to become a painter and incidentally scouting for a friend's New York gallery. Steichen sent off a selection of Marin's work to Alfred Stieglitz, who was already a mythic figure as a photographer and dealer, and who had begun to champion the new European avant-garde art. Stieglitz gave Marin his first American show, a joint exhibit with Alfred Maurer in 1909, and would see that there was a Marin show nearly every year until death put him out of business at the age of 82 in 1946.

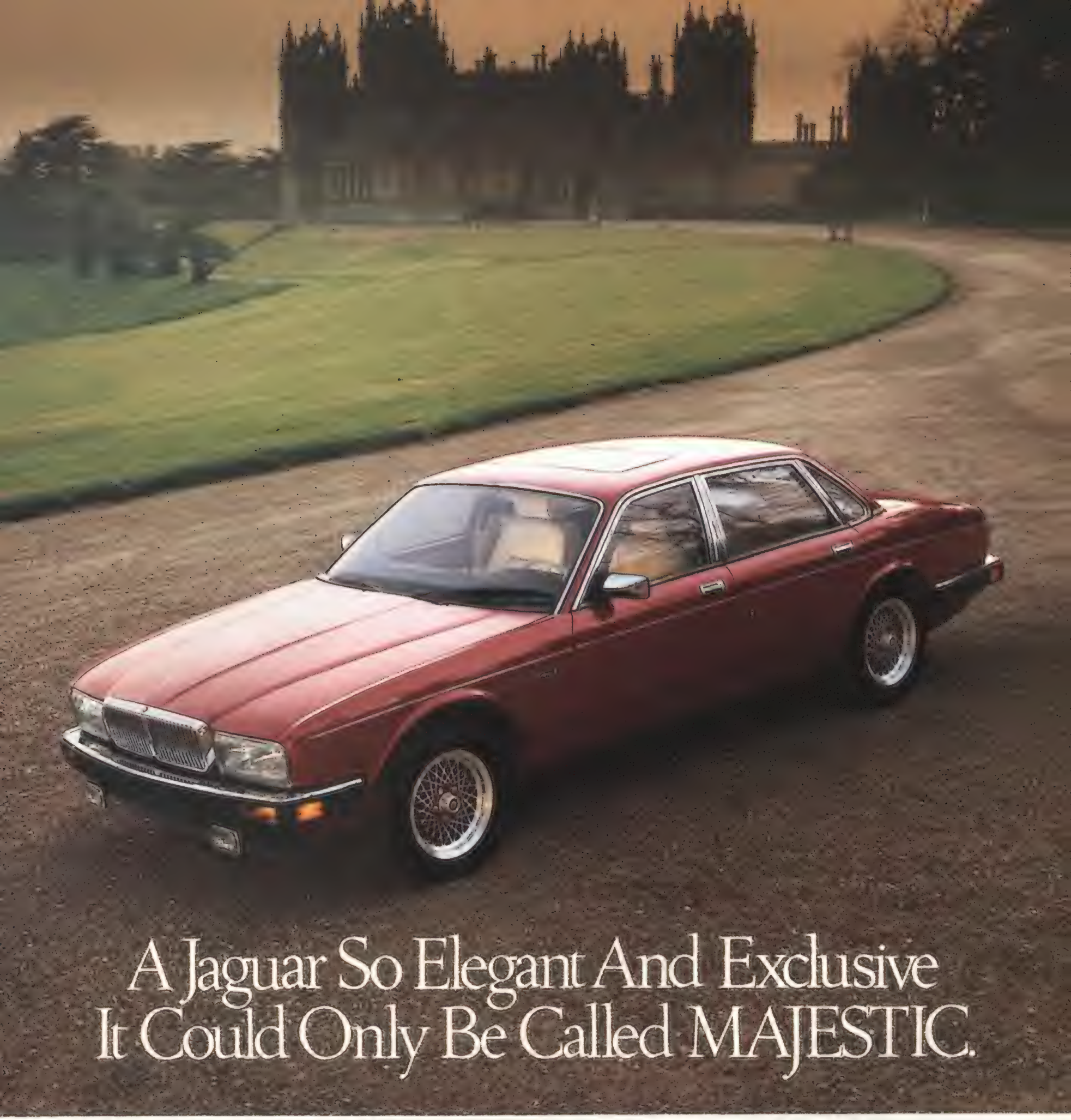
Indeed, it is not possible to think about John Marin without thinking also about Stieglitz. At no time in his life could you rightly say that this remarkable man was "in business." "Money soils relationships," he once told Dorothy Norman, a writer and photographer and the most devout of his parade of acolytes. In the beginning, he was a photographer, an amateur in the root sense of the word, who could not countenance the notion of pay for pictures. In the waning decades of the last century, by the time he was 25, Stieglitz mastered the camera perhaps as no man or woman before him had. In his hands, the big, crude 19th-century box for picture taking became a delicate instrument of art. One hundred years after he captured some of his scenes on film, Stieglitz photographs on the walls of museums are still astonishments.

Then, a few years into our century, Stieglitz discovered and began to show paintings and sculpture that much of the art world regarded as deranged: art that was defiantly "unbeautiful," art that was weirdly colored, art that fractured its imagery or entirely discarded recognizable imagery, difficult modernist art that only a man as brave, stubborn and opinionated as Stieglitz could have championed.

There are admirers who will argue persuasively that he may have been the greatest American dealer of modern times, a point of view that can be challenged only by Stieglitz's unyielding insistence that he was not a dealer. Nothing he showed carried a price. He took no sales commission, and he could be shatteringly dismissive about selling if he decided that the prospective buyer did not "deserve" to own a piece. He was an unreconstructed polemicist, a natural publicist, a fierce-eyed, charismatic, if threadbare, little figure in a dramatic black cloak.

An attic showcase for the new

Stieglitz's first gallery was a ramshackle attic space known simply as 291, its street address on Fifth Avenue. Launched in 1905, it was meant to celebrate photography as art, but the rooms were hardly open before Stieglitz was quarreling with his camera artists. At the same time, he was discovering the new European painters and sculptors who were shattering the conventions of form and space. Stieglitz understood what was happening and he approved. "The new art is antiphotography," he announced. At 291, many Americans saw their first works of Matisse, Toulouse-Lautrec, Picasso and Cézanne, among others, a few years before the epochal Armory Show of 1913 brought those painters national attention. With



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A B L E N D I N G O F A R T A N D M A C H I N E

Stieglitz in charge it was natural that the gallery would become a gathering place for young American intellectuals, a little temple where the preachings of the mesmeric proprietor fell on the eager ears of the young Carl Sandburg, Leopold Stokowski, Alfred Kreymborg, Sherwood Anderson and Lewis Mumford.

The first Marin watercolors on the walls of 291 sold for $25 to $35. (Last year, as appreciation for his work began to grow again, a Marin watercolor was auctioned for $165,000 at Christie's in New York.) If Stieglitz was indifferent to money for himself—so casual, indeed, that relatives tended to his minimal needs and friends organized a rent fund so that his gallery would not be perpetually in peril—he was sympathetic to the problems of adequate living standards for artists.

Marin, who had married in 1912 and had fathered a son, was settled in New Jersey. By the early 1920s, he had a small following, enough collectors and admirers willing—at the behest of his dealer—to guarantee the artist $3,000 annually for three years so that he could work without fretting about the price of eggs and cigarettes. Contributions were applied toward purchases of Marin works. By 1927, Stieglitz would claim, with some exaggeration, that he had sold a major Marin piece, the masterful *Back of Bear Mountain,* for $6,000 to Duncan Phillips, founder of the Phillips Gallery in Washington, D.C. and an early Marin enthusiast. In truth, $6,000 bought three Marins, but it was fair money for those times.

In the prime years of 291 and his two subsequent galleries, Stieglitz showed the works of Charles Demuth, Marsden Hartley, Max Weber, Arthur Dove, George Grosz, Abraham Walkowitz and Elie Nadelman. But the foundations of the modern gallery world are sunk in quicksand. One by one, these artists fell away until Stieglitz, old and enfeebled by a damaged heart, was exhibiting only Marin, O'Keeffe (whom he had discovered in 1915 and married in 1924; SMITHSONIAN, November 1987) and Dove.

Well before the '40s, Marin could have found, had he wanted to, more-fashionable, higher-priced galleries eager to hang his work, but he was faithful to the end—and even after Stieglitz was gone, during the few years that he and O'Keeffe tried to keep alive the last Stieglitz gallery, An American Place. In a loving posthumous tribute, a niece, Georgia Engelhard, a photographer, remembered her Uncle Alfred as "full of humor and kindness, Byronic, yet with a touch of the faun." Still, it must be noted, not everybody can learn to love a man whose notion of conversation is one voice unleashing a Niagara of opinion. Marin biographer MacKinley Helm, among others, apparently had reservations. Although his book would not be published until Stieglitz was two years gone, the author's hostile remarks about him were deleted from the manuscript or toned down at Marin's request.

It was a curiously distanced piece of work, as if biographer and subject had communicated through a

Mr. and Mrs. Vincent A. Carrozza, Dallas

One of a series of skeletal, vibrant studies of the city that Marin loved to paint is *New York at Night, No. 3.* Although seemingly casual, his work was planned with care to convey the "warring, pushing, pulling" forces his observant eye discerned in the city and in nature.

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Even in old age Marin continued to break new ground. During and after a hospital stay, he executed a number of paintings using a syringe along with brushes. He created this one, *The Written Sea*, when he was 81.

screen door. Shy, distrustful of strangers, calculatedly jocular with acquaintances, Marin was probably not a man who encouraged intimacy. The book, for example, never tried to convey the depth of Marin's feeling for music or to tell the reader how he had first found his way to the piano. And only after his death did Helm report Marin's "distress, deep distress" over the failure of his oils to win public acceptance.

Through most of his professional life Marin periodically worked on canvas, and in the late years felt compelled to turn more and more to oil; mainly unsold, those pictures were stored in a Manhattan warehouse, space leased for what he bitterly called his "Dark Room Collection." Confronting these pictures, so much denser and tenser than the bright, lyrical watercolors, the critics were largely unenthusiastic—"tepid," "dreadful" and "silly," said a *New York Times* reviewer—and the collecting public was indifferent.

But a painter does not change his medium simply for the sake of novelty. Oils provide the possibility of a variety of textures and of deep, rich colors. Late Marin oils are surprisingly robust; some of them convey an intensity, a turbulence, a celebratory spirit that watercolor would not allow. Transparent colors offer speed and lightness. Oils, slow to dry and easily correctable, deliver the luxury of leisure; they have more weight and they promise greater complexity. In Marin's case, one kind of work was not necessarily better than the other; he was experiencing the world around him in new ways and, in order to express a changing vision, he was prepared to take risks. The artist who leaves an imprint on his times is, in a way, cousin to the aerial acrobat flying without a net. It is hardly any wonder that, in the last decade of his life, the circus became a new subject of his art.

When he put away his paints at the end of his

working day, Marin became a man of simple, harmless pleasures. Late pictures show a wiry-looking figure with a long, thin Yankee nose, the parched skin of a farmer and a humorous mouth that often held a cigarette. In Maine, he picked berries or fished or hunted. When visitors came calling at Cliffside Park in 1949, they found a house filled with the most conventional kind of Grand Rapids-style furniture. They also found the Goldberg variations on the piano and an empty frame hanging above the fireplace. "My best picture," Marin said with a casual gesture. Of course, he didn't mean it for a moment.

Like most artists of genius, he resented criticism. Not surprisingly, he was also profoundly self-absorbed. Proclaiming his position on modern-art movements, Marin could, entirely unselfconsciously, grant himself a status equal to that of the greatest master of the English language. "I am completely unsympathetic with Cubism or other forms of abstraction or with Surrealism," he once wrote, apparently in answer to those who thought they saw traces of one of those modes in his work. "I belong to no ism. I haven't the time. Shakespeare belonged to no ism." It's hard to resist adding that if any ism could claim him, it would surely be only a benign, productive form of egoism.

Someone always saw to Marin's needs—his aunts, his father, later Stieglitz, and at home for 32 years, his wife. After Marie Hughes Marin died in 1945, his son took care of him; when he was gone, young Marin, until his own death in 1988, would become the vigilant guardian of the life's work and reputation. John jr. was so concerned with this task that he took his father along on his honeymoon in 1948. When visitors came to see the artist in the small house in Cape Split, Maine, it was young Marin who would check into a nearby hotel to make room for the guests.

This is, after all, the kind of homage that admirers, including family, finally willingly pay to an artist whose time is fading but who continues to work with undiminished energy and imagination. Until a stroke incapacitated Marin and, within seven weeks, took his life, his eyes never seemed to lose their sense of wonder. At the age of 80, he was still trudging up mountain paths in pursuit of another vista to paint. About a year later, an illness sent him to New York Hospital for 11 weeks. When he felt well enough to work and to register his resentment of the daily injections, he took a perfectly natural step to resume work: he confiscated a syringe, filled it with black ink and sketched the city view outside his high hospital window.

Irving Penn's studio portrait of Marin was taken in 1948 and presents a formidable, rocklike, sage figure.

Colonial window, 1822.

Mission window, 1793.

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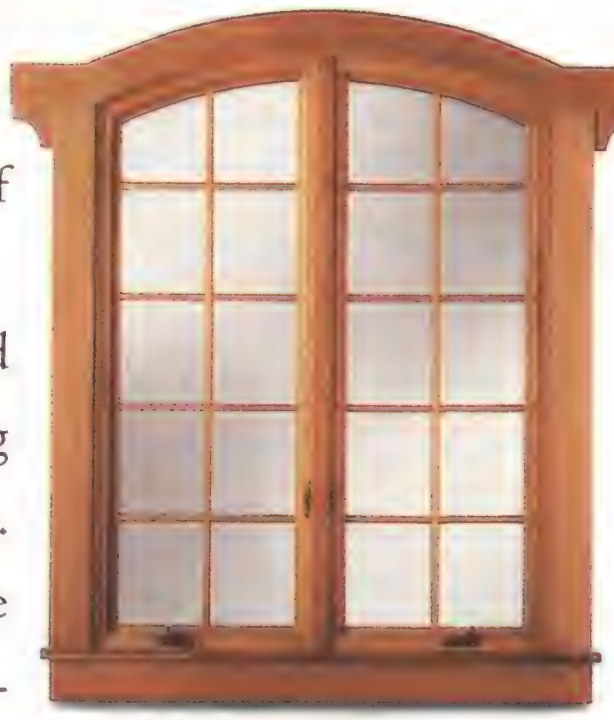

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By Charles L. Mee jr.

How a mysterious disease laid low Europe's masses

In the 1300s, a third of the population died of plague brought by fleas, shocking the medieval world to its foundations

In all likelihood, a flea riding on the hide of a black rat entered the Italian port of Messina in 1347, perhaps down a hawser tying a ship up at the dock. The flea had a gut full of the bacillus *Yersinia pestis.* The flea itself was hardly bigger than the letter "o" on this page, but it could carry several hundred thousand bacilli in its intestine.

Scholars today cannot identify with certainty which species of flea (or rat) carried the plague. One candidate among the fleas is *Xenopsylla cheopis,* which looks like a deeply bent, bearded old man with six legs. It is slender and bristly, with almost no neck and no waist, so that it can slip easily through the forest of hair in which it lives. It is outfitted with a daggerlike proboscis for piercing the skin and sucking the blood of its host. And it is cunningly equipped to secrete a substance that prevents coagulation of the host's blood. Although *X. cheopis* can go for weeks without feeding, it will eat every day if it can, taking its blood warm.

One rat on which fleas feed, the black rat (*Rattus rattus*), also known as the house rat, roof rat or ship rat, is active mainly at night. A rat can fall 50 feet and land on its feet with no injury. It can scale a brick wall or climb up the inside of a pipe only an inch and a half in diameter. It can jump a distance of two feet straight

Pieter Bruegel's *Triumph of Death,* painted in 1562, reflects influence of the plague's grotesque horrors.

Tiny carrier, the rat flea *Xenopsylla cheopis* drinks warm blood, can harbor swarms of bacilli in its stomach.

Rats, here circling in a sinister dance, likely brought the bacillus-filled fleas from Asia to Europe.

up and four horizontally, and squeeze through a hole the size of a quarter. Black rats have been found still swimming days after their ship has sunk at sea.

A rat can gnaw its way through almost anything—paper, wood, bone, mortar, half-inch sheet metal. It gnaws constantly. Indeed, it *must* gnaw constantly. Its incisors grow four to five inches a year: if it were to stop gnawing, its lower incisors would eventually grow—as sometimes happens when a rat loses an opposing tooth—until the incisors push up into the rat's brain, killing it. It prefers grain, if possible, but also eats fish, eggs, fowl and meat—lambs, piglets and the flesh of helpless infants or adults. If nothing else is available, a rat will eat manure and drink urine.

Rats prefer to move no more than a hundred feet from their nests. But in severe drought or famine, rats can begin to move en masse for great distances, bringing with them any infections they happen to have picked up, infections that may be killing them but not killing them more rapidly than they breed.

Rats and mice harbor a number of infections that may cause diseases in human beings. A black rat can even tolerate a moderate amount of the ferocious *Yersinia pestis* bacillus in its system without noticeable ill effects. But bacilli breed even more extravagantly than fleas or rats, often in the millions. When a bacillus finally invades the rat's pulmonary or nervous system, it causes a horrible, often convulsive, death, passing on a lethal dose to the bloodsucking fleas that ride on the rat's hide.

The ultimate bacillus breeder

When an afflicted rat dies, its body cools, so that the flea, highly sensitive to changes in temperature, will find another host. The flea can, if need be, survive for weeks at a time without a rat host. It can take refuge anywhere, even in an abandoned rat's nest or a bale of cloth. A dying rat may liberate scores of rat fleas. More than that, a flea's intestine happens to provide ideal breeding conditions for the bacillus, which will eventually multiply so prodigiously as finally to block the gut of the flea entirely. Unable to feed or digest blood, the flea desperately seeks another host. But now, as it sucks blood, it spits some out at the same time. Each time the flea stops sucking for a moment, it is capable of pumping thousands of virulent bacilli back into its host. Thus bacilli are passed from rat to flea to rat, contained, ordinarily, within a closed community.

For millions of years, there has been a reservoir of *Yersinia pestis* living as a permanently settled parasite—passed back and forth among fleas and rodents in warm, moist nests—in the wild rodent colonies of China, India, the southern part of the Soviet Union and the western United States. Probably there will

Medicine proved helpless against the plague. Surgeon is pictured fruitlessly lancing a frightened victim's swollen lymph nodes.

The sketchiness of this medieval illustration reflects the fact that anatomical knowledge was then rudimentary at best.

always be such reservoirs—ready to be stirred up by sudden climatic change or ecological disaster. Even last year, four authentic cases of bubonic plague were confirmed in New Mexico and Arizona. Limited outbreaks and some fatalities have occurred in the United States for years, in fact, but the disease doesn't spread, partly for reasons we don't understand, partly because patients can now be treated with antibiotics.

And at least from biblical times on, there have been sporadic allusions to plagues, as well as carefully recorded outbreaks. The emperor Justinian's Constantinople, for instance, capital of the Roman empire in the East, was ravaged by plague in 541 and 542, felling perhaps 40 percent of the city's population. But none of the biblical or Roman plagues seemed so emblematic of horror and devastation as the Black Death that struck Europe in 1347. Rumors of fearful pestilence in China and throughout the East had reached Europe by 1346. "India was depopulated," reported one chronicler, "Tartary, Mesopotamia, Syria, Armenia, were covered with dead bodies; the Kurds fled in vain to the mountains. In Caramania and Caesarea none were left alive."

Untold millions would die in China and the rest of the East before the plague subsided again. By September of 1345, the *Yersinia pestis* bacillus, probably carried by rats, reached the Crimea, on the northern coast of the Black Sea, where Italian merchants had a good number of trading colonies.

From the shores of the Black Sea, the bacillus seems to have entered a number of Italian ports. The most famous account has to do with a ship that docked in the Sicilian port of Messina in 1347. According to an Italian chronicler named Gabriele de Mussis, Christian merchants from Genoa and local Muslim residents in the town of Caffa on the Black Sea got into an argument; a serious fight ensued between the merchants and a local army led by a Tatar lord. In the course of an attack on the Christians, the Tatars were stricken by plague. From sheer spitefulness, their leader loaded his catapults with dead bodies and hurled them at the Christian enemy, in hopes of spreading disease among them. Infected with the plague, the Genoese sailed back to Italy, docking first at Messina.

Although de Mussis, who never traveled to the Crimea, may be a less-than-reliable source, his underlying assumption seems sound. The plague did spread along established trade routes. (Most likely, though, the pestilence in Caffa resulted from an infected population of local rats, not from the corpses lobbed over the besieged city's walls.)

In any case, given enough dying rats and enough engorged and frantic fleas, it will not be long before the fleas, in their search for new hosts, leap to a human being. When a rat flea senses the presence of an alternate host, it can jump very quickly and as much as 150 times its length. The average for such jumps is about six inches horizontally and four inches straight up in the air. Once on human skin, the flea will not travel far before it begins to feed.

Another recurrence of plague in Naples in 1656 inspired this depiction of dead being hauled away.

The first symptoms of bubonic plague often appear within several days: headache and a general feeling of weakness, followed by aches and chills in the upper leg and groin, a white coating on the tongue, rapid pulse, slurred speech, confusion, fatigue, apathy and a staggering gait. A blackish pustule usually will form at the point of the fleabite. By the third day, the lymph nodes begin to swell. Because the bite is commonly in the leg, it is the lymph nodes of the groin that swell, which is how the disease got its name. The Greek word for "groin" is *boubōn*—thus, bubonic plague. The swellings will be tender, perhaps as large as an egg. The heart begins to flutter rapidly as it tries to pump blood through swollen, suffocating tissues. Subcutaneous hemorrhaging occurs, causing purplish blotches on the skin. The victim's nervous system begins to collapse, causing dreadful pain and bizarre neurological disorders, from which the "Dance of Death" rituals that accompanied the plague may have taken their inspiration (p. 78). By the fourth or fifth day, wild anxiety and terror overtake the sufferer—and then a sense of resignation, as the skin blackens and the rictus of death settles on the body.

In 1347, when the plague struck in Messina, townspeople realized that it must have come from the sick and dying crews of the ships at their dock. They turned on the sailors and drove them back out to sea—eventually to spread the plague in other ports. Messina panicked. People ran out into the fields and vineyards and neighboring villages, taking the rat fleas with them.

When the citizens of Messina, already ill or just becoming ill, reached the city of Catania, 55 miles to the south, they were at first taken in and given beds in the hospital. But as the plague began to infect Catania, the townspeople there cordoned off their town and refused—too late—to admit any outsiders. The sick, turning black, stumbling and delirious, were objects more of disgust than pity; everything about them gave off a terrible stench, it was said, their "sweat, excrement, spittle, breath, so foetid as to be overpowering; urine turbid, thick, black or red. . . ."

Wherever the plague appeared, the suddenness of death was terrifying. Today, even with hand-me-down memories of the great influenza epidemic of 1918 (SMITHSONIAN, January 1989) and the advent of AIDS, it is hard to grasp the strain that the plague put on the

Charles Mee has written books on Rembrandt and on the 1787 American Constitutional Convention.

Floating high above the scene, a kneeling saint intercedes with the Redeemer on behalf of victims.

physical and spiritual fabric of society. People went to bed perfectly healthy and were found dead in the morning. Priests and doctors who came to minister to the sick, so the wild stories ran, would contract the plague with a single touch and die sooner than the person they had come to help. In his preface to *The Decameron*, a collection of stories told while the plague was raging, Boccaccio reports that he saw two pigs rooting around in the clothes of a man who had just died, and after a few minutes of snuffling, the pigs began to run wildly around and around, then fell dead.

"Tedious were it to recount," Boccaccio thereafter laments, "brother was forsaken by brother, nephew by uncle, brother by sister and, oftentimes, husband by wife; nay what is more and scarcely to be believed, fathers and mothers were found to abandon their own children, untended, unvisited, to their fate, as if they had been strangers. . . ."

In Florence, everyone grew so frightened of the bodies stacked up in the streets that some men, called *becchini*, put themselves out for hire to fetch and carry the dead to mass graves. Having in this way stepped over the boundary into the land of the dead, and no doubt feeling doomed themselves, the *becchini* became an abandoned, brutal lot. Many roamed the streets, forcing their way into private homes and threatening to carry people away if they were not paid off in money or sexual favors.

Visiting men with pestilence

Some people, shut up in their houses with the doors barred, would scratch a sign of the cross on the front door, sometimes with the inscription "Lord have mercy on us." In one place, two lovers were supposed to have bathed in urine every morning for protection. People hovered over latrines, breathing in the stench. Others swallowed pus from the boils of plague victims. In Avignon, Pope Clement was said to have sat for weeks between two roaring fires.

The plague spread from Sicily all up and down the Atlantic coast, and from the port cities of Venice, Genoa and Pisa as well as Marseilles, London and Bristol. A multitude of men and women, as Boccaccio writes, "negligent of all but themselves . . . migrated to the country, as if God, in visiting men with this pestilence in requital of their iniquities, would not pursue them with His wrath wherever they might be. . . ."

Some who were not yet ill but felt doomed indulged in debauchery. Others, seeking protection in lives of moderation, banded together in communities to live a separate and secluded life, walking abroad with flowers to their noses "to ward off the stench and, perhaps, the evil airs that afflicted them."

It was from a time of plague, some scholars speculate, that the nursery rhyme "Ring Around the Rosy" derives: the rose-colored "ring" being an early sign that a blotch was about to appear on the skin; "a pocket full of posies" being a device to ward off stench and (it was hoped) the attendant infection; "ashes, ashes" being a reference to "ashes to ashes, dust to dust" or perhaps to the sneezing "a-choo, a-choo" that afflicted those in whom the infection had invaded the lungs—ending, inevitably, in "all fall down."

In Pistoia, the city council enacted nine pages of regulations to keep the plague out—no Pistoian was allowed to leave town to visit any place where the

plague was raging; if a citizen did visit a plague-infested area he was not allowed back in the city; no linen or woolen goods were allowed to be imported; no corpses could be brought home from outside the city; attendance at funerals was strictly limited to immediate family. None of these regulations helped.

In Siena, dogs dragged bodies from the shallow graves and left them half-devoured in the streets. Merchants closed their shops. The wool industry was shut down. Clergymen ceased administering last rites. On June 2, 1348, all the civil courts were recessed by the city council. Because so many of the laborers had died, construction of the nave for a great cathedral came to a halt. Work was never resumed: only the smaller cathedral we know today was completed.

In Venice, it was said that 600 were dying every day. In Florence, perhaps half the population died. By the time the plague swept through, as much as one-third of Italy's population had succumbed.

In Milan, when the plague struck, all the occupants of any victim's house, whether sick or well, were walled up inside together and left to die. Such draconian measures seemed to have been partially successful—mortality rates were lower in Milan than in other cities.

Medieval medicine was at a loss to explain all this, or to do anything about it. Although clinical observation did play some role in medical education, an extensive reliance on ancient and inadequate texts prevailed. Surgeons usually had a good deal of clinical experience but were considered mainly to be skilled craftsmen, not men of real learning, and their experience was not much incorporated into the body of medical knowledge. In 1300, Pope Boniface VIII had published a bull specifically inveighing against the mutilation of corpses. It was designed to cut down on the sale of miscellaneous bones as holy relics, but one of the effects was to discourage dissection.

Physicians, priests and others had theories about the cause of the plague. Earthquakes that released poisonous fumes, for instance. Severe changes in the Earth's temperature creating southerly winds that brought the plague. The notion that the plague was somehow the result of a corruption of the air was widely believed. It was this idea that led people to avoid foul odors by holding flowers to their noses or to try to drive out the infectious foul odors by inhaling the alternate foul odors of a latrine. Some thought that the plague came from the raining down of frogs, toads and reptiles. Some physicians believed one could catch the plague from "lust with old women."

Both the pope and the king of France sent urgent requests for help to the medical faculty at the University of Paris, then one of the most distinguished medical groups in the Western world. The faculty responded that the plague was the result of a conjunction of the planets Saturn, Mars and Jupiter at 1 P.M. on March 20, 1345, an event that caused the corruption of the surrounding atmosphere.

Though the Jews died as frequently as everyone else, thousands were cruelly put to death as a cause of the plague. Persecutions began in the South of France, spreading to Italy, Germany and Switzerland. Besides being burned, many were walled up in their houses.

Miniature shows victims being buried in stylized city of Florence (at left) while ladies and gentlemen divert one another telling stories. This illustration is from Boccaccio's *Decameron*, a collection of tales told by people trying to escape, or to endure, the plague.

Ultimately, of course, most Christians believed the cause of the plague was God's wrath at sinful Man. And in those terms, to be sure, the best preventives were prayer, the wearing of crosses and participation in other religious activities. In Orvieto, the town fathers added 50 new religious observances to the municipal calendar. Even so, within five months of the appearance of the plague, Orvieto lost every second person in the town.

There was also some agreement about preventive measures one might take to avoid the wrath of God. Flight was best: away from lowlands, marshy areas, stagnant waters, southern exposures and coastal areas, toward high, dry, cool, mountainous places. It was thought wise to stay indoors all day, to stay cool and to cover any windows that admitted bright sunlight. In addition to keeping flowers nearby, one might burn such aromatic woods as juniper and ash.

The retreat to the mountains, where the density of the rat population was not as great as in urban areas, and where the weather was inimical to rats and fleas, was probably a good idea—as well as perhaps proof, of a kind, of the value of empirical observation. But any useful notion was always mixed in with such wild ideas that it got lost in a flurry of desperate (and often contrary) stratagems. One should avoid bathing because that opened the pores to attack from the corrupt atmosphere, but one should wash face and feet, and sprinkle them with rose water and vinegar. In the morning, one might eat a couple of figs with rue and filberts. One expert advised eating ten-year-old treacle mixed with several dozen items, including chopped-up snake. Rhubarb was recommended, too, along with onions, leeks and garlic. The best spices were myrrh, saffron and pepper, to be taken late in the day. Meat should be roasted, not boiled. Eggs should not be eaten hard-boiled. A certain Gentile di Foligno commended lettuce; the faculty of medicine at the University of Paris advised against it. Desserts were forbidden. One should not sleep during the day. One should sleep first on the right side, then on the left. Exercise was to be avoided because it introduced more air into the body; if one needed to move, one ought to move slowly.

By the fall of 1348, the plague began to abate. But then, just as hopes were rising that it had passed, the plague broke out again in the spring and summer of

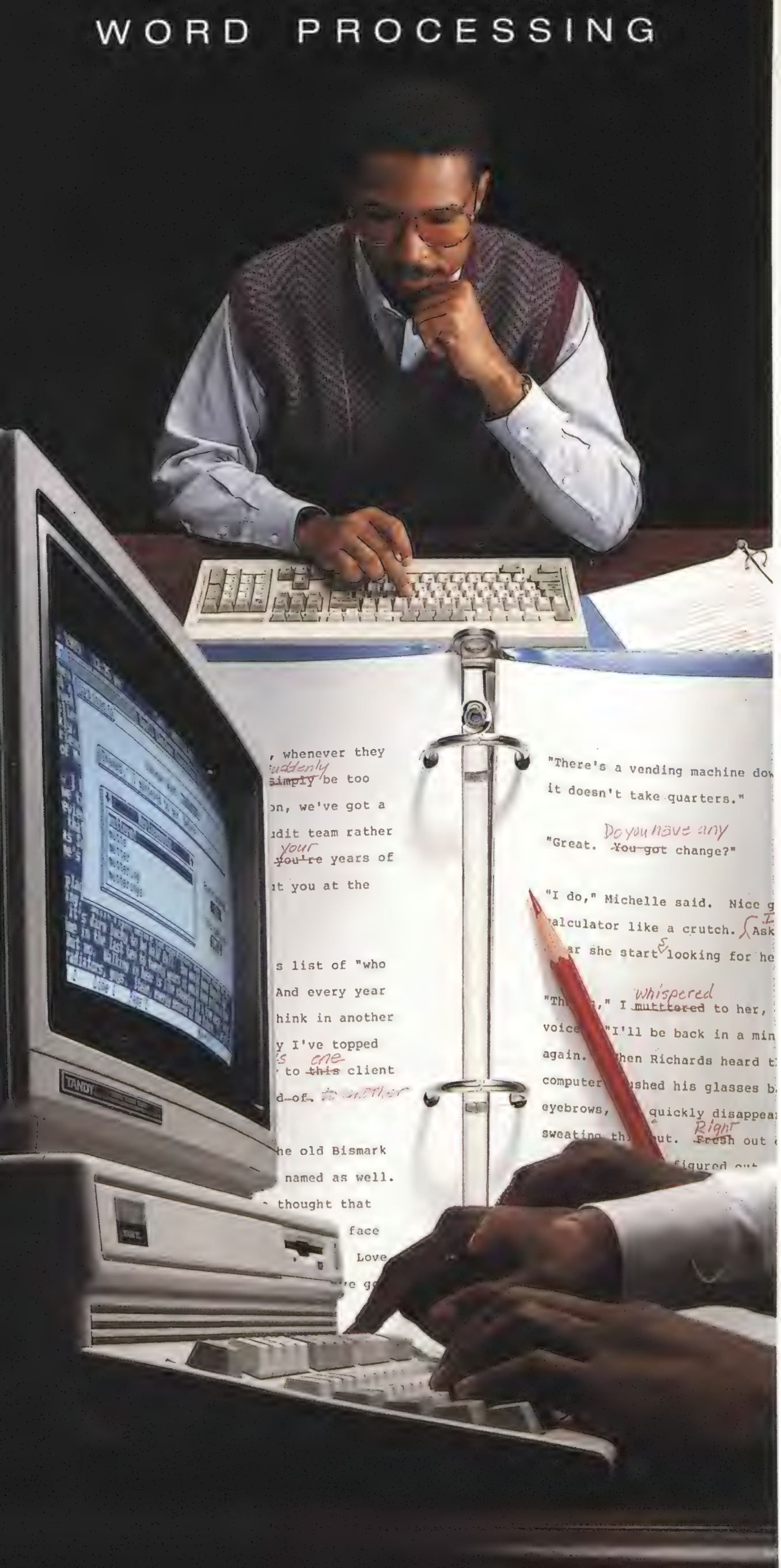
1349 in different parts of Europe. This recurrence seemed to prove that the warm weather, and people bathing in warm weather, caused the pores of the skin to open and admit the corrupted air. In other respects, however, the plague remained inexplicable. Why did some people get it and recover, while others seemed not to have got it at all—or at least showed none of its symptoms—yet died suddenly anyway? Some people died in four or five days, others died at once. Some seemed to have contracted the plague from a friend or relative who had it, others had never been near a sick person. The sheer unpredictability of it was terrifying.

In fact, though no one would know for several centuries, there were three different forms of the plague, which ran three different courses. The first was simple bubonic plague, transmitted from rat to person by the bite of the rat flea. The second and likely most common form was pneumonic, which occurred when the bacillus invaded the lungs. After a two- or three-day incubation period, anyone with pneumonic plague would have a severe, bloody cough; the sputum cast into the air would contain *Yersinia pestis.* Transmitted through the air from person to person, pneumonic plague was fatal in 95 to 100 percent of all cases.

The third form of the plague was septocemic, and its precise etiology is not entirely understood even yet. In essence, however, it appears that in cases of septocemic plague the bacillus entered the bloodstream, perhaps at the moment of the fleabite. A rash formed and death occurred within a day, or even within hours, before any swellings appeared. Septocemic plague always turned out to be fatal.

Some people did imagine that the disease might be coming from some animal, and they killed dogs and cats—though never rats. But fleas were so much a part of everyday life that no one seems to have given them a second thought. Upright citizens also killed gravediggers, strangers from other countries, gypsies, drunks,

Because it was commonly believed that the plague was a sign of God's wrath at sinful Man, long chains of penitents roamed the countryside, whipping and abasing themselves, and praying to God for mercy. The dragon that is borne aloft is a symbol of the Great Tempter himself.



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Nursery rhyme "Ring Around the Rosy" derives from plague time, when flowers were used to mask stench.

beggars, cripples, lepers and Jews. The first persecution of the Jews seems to have taken place in the South of France in the spring of 1348. That September, at Chillon on Lake Geneva, a group of Jews were accused of poisoning the wells. They were tortured and they confessed, and their confessions were sent to neighboring towns. In Basel all the Jews were locked inside wooden buildings and burned alive. In November, Jews were burned in Solothurn, Zofingen and Stuttgart. Through the winter and into early spring they were burned in Landsberg, Burren, Memmingen, Lindau, Freiburg, Ulm, Speyer, Gotha, Eisenach, Dresden, Worms, Baden and Erfurt. Sixteen thousand were murdered in Strasbourg. In other cities Jews were walled up inside their houses to starve to death. That the Jews were also dying of the plague was not taken as proof that they were not causing it.

On the highways and byways, meanwhile, congregations of flagellants wandered about, whipping themselves twice a day and once during the night for weeks at a time. As they went on their way they attracted hordes of followers and helped spread the plague even farther abroad.

The recurrence of the plague after people thought the worst was over may have been the most devastating development of all. In short, Europe was swept not only by a bacillus but also by a widespread psychic breakdown—by abject terror, panic, rage, vengefulness, cringing remorse, selfishness, hysteria, and above all, by an overwhelming sense of utter powerlessness in the face of an inescapable horror.

After a decade's respite, just as Europeans began to recover their feeling of well-being, the plague struck again in 1361, and again in 1369, and at least once in each decade down to the end of the century. Why the plague faded away is still a mystery that, in the short run, apparently had little to do with improvements in medicine or cleanliness and more to do with some adjustment of equilibrium among the population of rats and fleas. In any case, as agents for Pope Clement estimated in 1351, perhaps 24 million people had died in the first onslaught of the plague; perhaps as many as another 20 million died by the end of the century—in all, it is estimated, one-third of the total population of Europe.

Very rarely does a single event change history by itself. Yet an event of the magnitude of the Black Death could not fail to have had an enormous impact. Ironically, some of the changes brought by the plague were for the good. Not surprisingly, medicine changed—since medicine had so signally failed to be of any help in the hour of greatest need for it. First of all, a great many doctors died—and some simply ran away. "It has pleased God," wrote one Venetian-born physician, "by this terrible mortality to leave our native place so destitute of upright and capable doctors that it may be said not one has been left." By 1349, at the University of Padua there were vacancies in every single chair of medicine and surgery. All this, of course, created room for new people with new ideas. Ordinary people began wanting to get their hands on medical guides and to take command of their own health. And gradually more medical texts began to appear in the vernacular instead of in Latin.

An old order was besieged

Because of the death of so many people, the relationship between agricultural supply and demand changed radically, too. Agricultural prices dropped precipitously, endangering the fortunes and power of the aristocracy, whose wealth and dominance were based on land. At the same time, because of the deaths of so many people, wages rose dramatically, giving laborers some chance of improving their own conditions of employment. Increasing numbers of people had more money to buy what could be called luxury goods, which affected the nature of business and trade, and even of private well-being. As old relationships, usages and laws broke down, expanding secular concerns and intensifying the struggle between faith and reason, there was a rise in religious, social and political unrest. Religious reformer John Wycliffe, in England, and John Huss, in Bohemia, were among many leaders of sects that challenged church behavior and church doctrine all over Europe. Such complaints eventually led to the

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Church fresco, painted in the late 15th century, deals with common theme then, the "Dance of Death."

Because plague struck at all levels, the Grim Reaper takes a turn with priest, peasant, woman, child.

Protestant Reformation, and the assertion that Man stood in direct relation to God, without need to benefit from intercession by layers of clergy.

Indeed, the entire structure of feudal society, which had been under stress for many years, was undermined by the plague. The three orders of feudalism—clergy, nobility and peasantry—had been challenged for more than a century by the rise of the urban bourgeoisie, and by the enormous, slow changes in productivity and in the cultivation of arable land. But the plague, ravaging the weakened feudal system from so many diverse and unpredictable quarters, tore it apart.

By far the greatest change in Western civilization that the plague helped hasten was a change of mind. Once the immediate traumas of death, terror and flight had passed through a stricken town, the common lingering emotion was that of fear of God. The subsequent surge of religious fervor in art was in many ways nightmarish. Though medieval religion had dealt with death and dying, and naturally with sin and retribution, it was only after the Black Death that painters so wholeheartedly gave themselves over to pictures brimming with rotting corpses, corpses being consumed by snakes and toads, swooping birds of prey appearing with terrible suddenness, cripples gazing on the figure of death with longing for deliverance, open graves filled with blackened, worm-eaten bodies, devils slashing the faces and bodies of the damned.

Well before the plague struck Europe, the role of the Catholic Church in Western Europe had been changing. The Papacy had grown more secular in its concerns, vying with princes for wealth and power even while attempts at reform were increasing. "God gave us the Papacy," Pope Leo X declared. "Let us enjoy it." The church had suffered a series of damaging losses in the late 1200s—culminating in 1309 when the Papacy moved from Rome to Avignon. But then, the Black Death dealt the church a further blow, for along with renewed fear and the need for new religious zeal came the opposite feeling, that the church itself had failed. Historical changes rarely occur suddenly. The first indications of change from a powerful catalyst usually seem to be mere curiosities, exceptions or aberrations from the prevailing worldview. Only after a time, after the exceptions have accumulated and seem to cohere, do they take on the nature of a historical movement. And only when the exceptions have come to dominate, do they begin to seem typical of the civilization as a whole (and the vestiges of the old civilization to seem like curiosities). This, in any case, is how the great change of mind occurred that defines the modern Western world. While the Black Death alone did not cause these changes, the upheaval it brought about did help set the stage for the new world of Renaissance Europe and the Reformation.

As the Black Death waned in Europe, the power of religion waned with it, leaving behind a population that was gradually but certainly turning its attention to the physical realm in which it lived, to materialism and worldliness, to the terrible power of the world itself, and to the wonder of how it works.

Medical men who regularly wore bird masks to prevent spread of infection became known as Beak Doctors.

STONEHENGE AND THE SPACE TELESCOPE

Over 4,100 years ago a Neolithic people built a remarkable monument on the Salisbury Plain in what is now southern England. As an engineering feat alone, Stonehenge stands as one of the wonders of the world. But a recent discovery has revealed that it served not only as a temple, but as an astronomical computer.

We know very little about the life of the people who built Stonehenge. But one thing that has become increasingly evident is that they were far more sophisticated than was previously believed. Even though they

worked only with Stone Age technology, they built a monument which apparently acted as an astronomical clock. With Stonehenge they could predict eclipses, the exact days of the solstices, the long-term cycles of the moon and sun, and other important heavenly events. They could begin to understand that the universe had order and how it worked.

The need to understand the workings of the universe is very ancient in man. One might even say that it is instinctual, that it is part of what makes us human.

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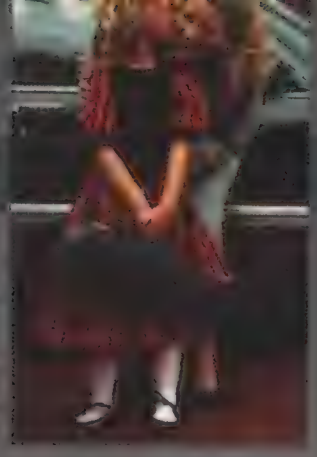

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The Bach whose works have only humorous notes

Discoverer of the lost scores of P.D.Q. Bach, 'Prof.' Schickele has been stomping on the pomp and pretense of classical music for 25 years

It's past showtime, but there's no sign of action on the stage. Half the capacity crowd begin to look impatient; the other half smile knowingly. A scruffy-looking chap shuffles onto the stage. The with-it part of the audience greet him with boos and hisses; they know what's going to happen. They know that Bill Walters, who plays this seedy stage-manager type but who is actually a part of the traveling entourage of Peter Schickele and his alter ego, P.D.Q. Bach, is going to launch into some sad-toned explanation. "Professor" Schickele, he will announce, is lost, he took the wrong turn off the freeway, or he read his schedule wrong, or . . .

Then comes the evening's first great moment (of many), a thrill and surprise to the uninitiated, an old-hat ritual to the others: a commotion out in the lobby, a door bursting open, a headlong dash down the side aisle and onto the stage as the long-awaited Prof. Peter Schickele, his tattered tailcoat half on, half off, his clunky workman's shoes a lurid contrast, executes one of his famous glorious arrivals. He leans on the podium a moment to catch his breath, a wild mass of streaming hair and beard that summons images of a somewhat deranged Johannes Brahms to some, and Rasputin to others; then he's off and running again. Another evening with P.D.Q. Bach, in the loving care of his mentor, inventor and discoverer, Peter Schickele, has lurched to its expectedly unexpected opening, and the crowd is in its expected state of rapture.

It will be 25 years come April since the formidable physiognomy of the professor and the comparably formidable musical output of the, well, formidable P.D.Q., "last and least of the 20-odd children of J. S. Bach," according to his Earthly apostle and perpetrator, was first foisted on startled ticket holders in New York's Town Hall. Somewhere in this world, in every moment since then, it is reasonably safe to surmise, someone has been laughing at P.D.Q. Bach—at a concert; or in communion with one of nearly a dozen recordings on the Vanguard label, or with the brand-new compact disk from Telarc, or with the videotape of his full-length opera, *The Abduction of Figaro.*

The conventions of classical music are weighed down with enough artificialities, stiff-backed formalities and just plain absurdities that merely recounting them straight, or with the slightest shading of emphasis, can induce high hilarity. Even the great Mozart, sublime practitioner of the classical art, got in his digs at some of the musical foibles of his own time. His sextet for strings and horns entitled "A Musical Joke" mimics some of the clichés rampant among the lesser composers of the 18th century, and does so with practiced drollery and even a touch of cruelty.

And if Mozart found plenty to laugh at with his take-no-prisoners piece of 1787, so have his successors among music's true humorists. "I'm not making this up, you know!" screams the redoubtable Anna Russell in her compressed but awesomely accurate retelling of the plot of Wagner's *Ring of the Nibelung*, at the point when the heroic Siegfried falls in with a succession of sopranos who all happen to be his aunts. And long before Russell, America's comic-strip artists drew constantly on the absurdity of serious music and its devotees: Maggie dragging the suffering Jiggs to a night of opera (always symbolized by an open-mouthed, armor-clad fat woman onstage), or Popeye's Olive Oyl and her grotesque voice lessons.

A perfect target for stone throwers

The gist of these antic, if basically accurate, evocations of the mystique of classical music seemed to be that both the art and any jokes about that art constituted an elitist commodity designed to undermine the sanity and threaten the virility of the masses. Anna Russell may have cut a bizarre stage figure, fun to watch, but the only way to get inside her jokes was to know the Wagner operas backward and forward. In recent times the immensely popular Victor Borge continues to propound the notion of music as an elitist art and, as such, a perfect target for stone throwers from the masses. In his comic world, grand opera is still sung only by fat, armored sopranos.

Not so in Peter Schickele's world, either in his own admired serious compositions or in the all-knowing works of his prolific alter ego. The most heartwarming

Clodhoppers are ideal for his office at the fanciful University of Southern North Dakota at Hoople, quips Peter Schickele, since it is a barn. Tails, of course, are de rigueur for formal concert performances.

Photographs by Bill Ray

Schickele and manager Bill Crawford prefer "stuffy" halls like Carnegie for P.D.Q.'s "serious music" spoofs.

effect of an evening spent with the music, and the musical antics, of P.D.Q. Bach is an abiding sense of hilarious-yet-wise entertainment designed to give pleasure on any level you choose. During the course of that evening a vast array of music's most-venerated mannerisms get taken for a congenial but bumpy ride: the pompous symphonies from Haydn's time that attempt huge musical structures out of themes that are nothing but up-and-down scales; the baroque cantatas that spin out their endless arias on the most insipid texts. In one of P.D.Q.'s most inspired outpourings, a cantata called "Iphigenia in Brooklyn," the soloist ends one recitation with the words "Only he who is running knows." The ensuing aria is based entirely on the last two words of that text.

Recently the Schickele-P.D.Q. Bach team has even thrown down the gauntlet to compositional peculiarities of our own time, notably the much-acclaimed "minimalist" style of composer Philip Glass. In a new P.D.Q. Bach piece called Prelude to *Einstein on the Fritz*, the endlessly unvaried noodle-noodle style of Glass' own *Einstein on the Beach* gets its comeuppance. You might not know from this that Schickele and Glass were once classmates at the Juilliard School, were great friends then and are great friends still.

Do such shenanigans raise hackles among musical purists? Schickele remembers one instance, when a Juilliard classmate stormed out angrily after she found that the music at hand included the simultaneous playing of "Tea for Two" and Beethoven's Seventh Symphony. Most of the time, assures Schickele, the hard-liners come around. Musicologist Robert Winter, of the University of California, Los Angeles, himself a renowned authority on music in the time of P.D.Q. Bach (whose dates, according to Schickele, are 1807-1742, in that order), admires Schickele particularly for "his ability to walk the fine line between humor and excess. It isn't only that he's exposing sacred cows. He's spoofing things that most people don't even know, and yet he makes them feel like insiders."

The Concerto for Horn and Hardart

A P.D.Q. concert may add up to a radiant evening of musical insights, but the gags work on many levels. Take, for example, one of his early masterworks, the Concerto for Horn and Hardart, which knocked 'em in the aisles at the first Town Hall concert in 1965 and can still be heard on records. "Horn & Hardart, in case you've forgotten," explains Schickele, "was the real name of that chain of restaurants we all knew as the Automats. The name was so suggestive, musically I mean, that it was inevitable that somebody would get the idea to write it into a concerto."

The "Horn" part was easy. The "Hardart," Schickele

The curious size relationship between chocolate chips and the bakers of chocolate chip cookies.

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Have you tried one? No? Now *that's* curious.

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Aside from the satirical routines, Schickele is also an accomplished composer of chamber and choral works, operas and film scores. After the 1990-91 season, he will stop touring to write; he may even do a radio show.

decided, would be something fresh in from Oz, a fantastic console made up of toy instruments and household items, each with its own pitch. The result was a composition with a funny name (one level of humor) and a funny-looking main instrument (a second level) giving off an array of funny sounds (a third), all amalgamated into a 15-minute piece packed full of hilarious takeoffs on the standard turns of phrase and melodic gambits of the run-of-the-mill 18th-century composers.

Take another piece—from the latest P.D.Q. Bach recording—the "1712 Overture," composed in 1985 for the Boston Pops' centennial but played on the recording by an aggregation that calls itself the Greater Hoople Area Off-Season Philharmonic. For a full assessment of this music it might help to know that 1) Tchaikovsky composed an "1812 Overture," 2) Tchaikovsky's music begins with an old Russian folk tune played slowly in a very lush-sounding arrangement for strings, 3) during the course of the "1812 Overture" several other famous tunes are worked in and 4) the piece ends with a mighty battle, complete with cannon, in which the competing themes are played off against one another in counterpoint, with that first folk melody emerging triumphant over its "enemies."

Schickele planned his piece along very much the same lines, to marvelous effect. The tune at the beginning, again set in the strings' gooiest tones, is nothing less than our old friend "Yankee Doodle." It's a perfect musical gag since the first four notes of the song are the same as those written by Tchaikovsky. The tunes that come in later to do battle include other familiar fare, such as "Pop! Goes the Weasel," and the order of events is purposely close to the plan of action in the "1812 Overture." Thus, you can hear the work as an observant takeoff on a familiar symphonic masterpiece. If you happen to have lived your life out of earshot of the Tchaikovsky (is that possible?) you can hear the "1712" as a remarkably tricky treatment of well-known historic tunes (and a few surprises). Or you can hear it simply for the fun of its sounds, including the exploding balloons that serve as counterpart to Tchaikovsky's gunfire. There's something for everyone.

Los Angeles music critic Alan Rich has studied the classics for decades but admits that to get all of Schickele's jokes "you gotta be Pretty Damn Quick."

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The professor's arsenal of "devious" instruments and techniques includes the left-handed sewer flute.

There was plenty of music in the Schickele household during Peter's childhood. "My parents, I remember, had the first two volumes of a complete three-volume recording of Mozart's *Così fan tutte*, and I was fascinated with the idea that I could invent my own endings. It was a real disappointment when I finally got to hear the whole opera. My brother and I had an improvised theater in the basement, and we made up plays and musical acts and invited people in to see them."

The epiphany came when the 10-year-old Peter was in a record store. "I heard this sappy love song, then at the end there were two pistol shots and the music went into a kind of Dixieland. This was my first discovery of Spike Jones, and from then on my brother and I spent our allowances on his records. We even entertained at Rotary lunches, lip-syncing to Spike Jones records." From there it was a short step to the Schickele brothers' own band: Jerky Jems and his Balmy Brothers.

At Swarthmore College, Schickele found himself the only music major. "It was great," he remembers. "I took this one music seminar, and at the end of the year we'd just renumber it in the catalog and continue on. Sooner or later, I knew, I'd end up at Juilliard, but I was glad for the Swarthmore years, because when I did get to Juilliard I found I was one of the few people there who knew how to complete a sentence."

We are now approaching the time of the birth of P.D.Q. Bach. "In 1953 I was home from Swarthmore, and I had a friend, Ernie Lloyd, who had the idea of using two tape recorders to overdub music, the sort of thing that's easy now but wasn't back then. We did an overdub of one of Bach's Brandenburg concertos and the sound was like mud wrestling. But then I found a record of Bach's 'Coffee Cantata,' and that inspired me to write 'Sanka Cantata.' We needed a name for the composer. We knew about J. S. Bach and all those sons of his: J. C., W. F., C.P.E. and the rest. I don't remember who suggested 'P.D.Q. Bach,' but Ernie's mother says it was Ernie so maybe it was, and it stuck."

Some of P.D.Q.'s highest notes are off the keyboard; when played, audience hears only barking offstage.

Schickele remembers his Juilliard years as "majoring in cafeteria. We'd spend hours at tables frequented by composers and performers. We talked one time about all the really funny things we'd seen at concerts. I remembered the time when the Minneapolis Symphony was playing Respighi's 'Pines of Rome,' and at the point where there's supposed to be a phonograph record of a nightingale, all we heard was a big *splat.* The record player had blown a fuse and nobody in the orchestra could stop laughing, not even the conductor.

"Anyhow, one time somebody at Juilliard asked if I could fill out half a concert program on short notice, and so I decided it was time for P.D.Q. Bach to come to New York. There we all sat, copying out parts—Philip Glass, Richard Peaslee, others. At one rehearsal, Jorge Mester [renowned conductor and teacher; SMITHSONIAN, September 1984] and the orchestra were rehearsing the first movement while Phil

and I were out in the hall frantically copying the last."

Philip Glass, too, remembers those days. "Peter was, in all my class, the most gifted. His command of contemporary musical language was far ahead of anyone else's. He could write synthetic Copland, synthetic Stravinsky, and for that matter, synthetic Bach and Mozart—anybody. He inspired us all simply because he made music seem easy. He had no fear of the terrors of composition; he took the anxiety out of making music."

Yet there were anxieties along the way. By 1960 Schickele had had it with the New York scene and took a teaching job in Los Angeles—only to return to Juilliard as a faculty member a year later. With stability for Schickele there also came stability for P.D.Q. Bach. By April 1965 there was enough P.D.Q. material on the shelf to risk a commercial concert. As you can hear on the Vanguard recording, it was a howling success. A year later it was time to broach the hallowed

The wine-filled *tuba mirum* (mere tube) sounds like a "drunken penny whistle" when it is blown into.

precincts of Carnegie Hall, with results that also exist on record.

Currently Schickele exhumes his illustrious alter ego for five months' touring each year, during fall and winter. That time is divided between appearances with symphony orchestras across the land and tours by van and truck with a smaller-scale show called "The Intimate P.D.Q. Bach." "We need the truck to transport the props and costumes," Schickele explains; "a collapsible cow, the stuffed raccoon and the voice-altering machine."

The other seven months are Schickele's own, for creating new pieces for the P.D.Q. repertoire and for composing a respectable amount of music to which Schickele appends his own name. That repertoire already includes several string quartets, a concerto for piano and chorus, and a number of other works for chamber ensemble.

It's not always that easy, of course, to distinguish the boundaries between the two composers. P.D.Q.'s most extensive work so far is a gloriously inventive mishmash of an opera, called *The Abduction of Figaro*, a weird and wonderful tip of the hat to inspired moments from several Mozart operas, with a great deal of Schickele-concocted spice. It stands to reason, and the results bear it out, that an opera of more than two hours' duration can't be all froth. On the other hand, Schickele's *Go For Broke*, a madrigal-opera with quite a few comic moments, has just premiered. The two works may well overlap.

Says Schickele, "Naturally I have some trouble with people who cannot accept the notion of my having a serious side. My Quartet No. 2, which I subtitled 'In Memoriam,' was on a concert recently, and my wife overheard a couple who were reading from the program. 'Look at that,' the man was saying to his wife, '"In Memoriam." Isn't that just like him!' "

It is, in fact, a classic situation: the clown who wants to play Hamlet, but can't keep from laughing. "When I

The Schlagenfrappe, a set of cardboard tubes, is "especially sonorous when hit against an empty head."

give a program of my own serious music," says Schickele, "I like to give the program notes verbally because, without being didactic or negative, I can make sure people aren't expecting the wrong thing."

There's only one problem here: whether the evening's composer is P.D.Q. Bach or his amanuensis, Peter Schickele, there is no "wrong thing." We happened to cross paths—Schickele and I, that is—at a chamber music festival in Telluride, Colorado, this past summer. Schickele was there to deliver program notes and accept applause for a perfectly innocent set of chamber pieces. He took the stage and, just at the familiar sight of him, the crowd roared. He delivered a sweet and pertinent exegesis of his music, and the crowd broke up. The music began and the crowd fell respectfully silent. Not by words but by the beauty of his music did Hamlet overcome the clown that night. And that's probably the best way, anyhow.

The Magic Bassoon: An Opera in One Cathartic Act "proves once and for all that bassoon is spring whence Western music sprang," says Schickele. Mezzo-soprano Dana Krueger, pianist Peter Lurye, are P.D.Q. regulars.

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During cleaning, Eve emerges from *Expulsion of Adam and Eve from Paradise*. Fig leaf was not by Masaccio.

By Michael Olmert

The new look of the Brancacci Chapel discloses miracles

After a four-year cleaning of the frescoes of Masaccio and contemporaries in Florence, a chamber of wonders is now revealed

Florence is the city that taught the world a new way of seeing and so introduced the Renaissance. The afterglow from that awakening still illuminates its museums and churches.

These days Florence has become newly enchanted by the Renaissance painter known as Masaccio (1401-1428), a painter who broke with the tradition of his time to bring a vivid naturalism to the depiction of the human form in place of the traditionally idealized figures, and a passion to the human face. Masaccio was one of the greatest painters between the massive pillars of Giotto, in the 14th century, and Michelangelo, in the 16th. In just the few years of his brief working life, he lighted the path that art would trace for centuries.

But why the excitement now? Masaccio is not exactly an unknown painter. Because, after 560 years, his most important fresco cycle has been restored to its original brilliance, again testifying to the wonders of art and experience from the dawn of that brave new age.

Masaccio's reputation lives on in a mere handful of paintings. So it is primarily to the frescoes in Florence's Brancacci Chapel—stunning views of the expulsion from Eden and the miracles of Saint Peter—that we turn when we want to understand him.

Certainly, Michelangelo must have understood Masaccio. As a fledgling artist, Michelangelo often went to the Brancacci Chapel to copy the frescoes, completed 50 years before he was born. Even today, it is surprising to think that in 1425 Masaccio could create figures so natural, landscapes so believable, faces so

full of passion. These are not two-dimensional people in stiff poses. They breathe, they bleed. Leonardo, too, found inspiration in Masaccio's art. As he wrote in his *Codice Atlantico*, "Masaccio showed by his perfect work that those who did not take as author nature, master of masters, struggled in vain."

The Brancacci restoration opens in the spring. It is sponsored by the Olivetti Corporation, which is also supporting the exhaustive restoration of *The Last Supper* in Milan. Several years ago Olivetti sponsored the restoration of the bronze horses atop the Basilica of San Marco in Venice (SMITHSONIAN, September 1982); they are now inside the basilica. In the Brancacci Chapel, four years of work have flashed by like lightning, illuminating not only the 12 frescoes in this chapel, but also the collaboration between the shadowy Masaccio and the man who was long thought to be his painting master, Masolino (1383-1447?).

During the restoration, which was completed last fall, a team directed by Ornella Casazza of the Art Superintendency of Florence gingerly removed centuries of soot laid down by votive candles and oil lamps. Their technique: a mild solvent applied to the plaster surface through a protective layer of rice paper. That softened the dirt, which was then erased with cotton swabs dipped in distilled water.

What has emerged are details that have long eluded scholars. Among them: landscape backgrounds that extend out of the frame of one fresco, flow behind a corner pilaster and emerge in the next scene, showing that the chapel art was conceived as a whole. And when Saint Peter cures the sick who kneel as he passes, we can, for the first time in centuries, see the saint's therapeutic shadow.

A key to the original is uncovered

The Brancacci Chapel restoration has been free of the controversy that has dogged other restorations, some of which involved removing a surface layer of darkening glue that was added to counteract the blurring effect of saline deposits. The recent cleaning of the Sistine Chapel in Rome is the most prominent example. "Foul!" cried some critics, who claimed that the great work was being desecrated and should have been left as it was.

Such is not the case at the Brancacci. Within a few decades of the chapel's completion, an altar was installed that covered the edges of several frescoes and concealed a number of small paintings, which were thus shielded from light and pollution. When the heavy marble was recently moved, the original colors were revealed in all their brilliance. "With those as our color guide," says professor Umberto Baldini, of the University of Florence, and until recently director of

Now restored to its original state, without fig leaf, *Expulsion* is a piercing portrayal of the tragedy.

Photographs by Antonio Quattrone

Masolino or Masaccio? Authorities now tend to lean toward Masaccio as painter of this portrait of a youth.

Saint Peter Healing the Sick with his Shadow, taken from Acts of the Apostles, humanizes a sacred moment.

the Central Restoration Institute, "who could be against us?"

The Brancacci Chapel is in the west transept of Santa Maria del Carmine. This otherwise unremarkable church is in an artisans' district, a tangle of workshops and businesses on the south bank of the Arno. It has never been a place of elegance. Across the river the palazzos of the aristocrats crowd in on one another within sight of Brunelleschi's Duomo.

By contrast, this side of the river was a shirtsleeve zone of woodworkers and silk weavers, and still is. Not two blocks away from the church you can see the cloistered looms of Antico Setificio Fiorentino, an ancient silk-weaving firm whose workers still produce, on 200-year-old machines, patterns once woven to the express order of Mary, Queen of Scots.

Silk meant money in the Renaissance, and money, often as not, meant art. To the Brancacci family, silk also meant power, a coin they tendered to have several of their tribe made cardinals. In 1422-23 the scion of the family, Felice Brancacci, was sent on a Florentine mission to the sultan of Egypt in Cairo to procure the Orient trade through the newly opened port of Pisa. Later he was assigned to the prestigious court of Pope Eugene IV.

On his return, Brancacci, a young man of his time and place, must have wanted to demonstrate the piety of his city and family. As a start, he settled on decorating the unfinished transept of a church adjacent to a

monastery of the Carmelite order, an order dedicated to prayer and good works.

At the time, churches were, among other things, the art galleries of the world. They housed the finest works that craft and culture were capable of. Wealthy merchants were turning more and more to the commissioning of artwork for their own family chapels and for the churches. Piety and devotion went hand in glove with profit and public relations. So it was in what soon became known as the Brancacci Chapel of the Carmelite church.

Brancacci wanted to fill his chapel with the highest order of art, in a city whose artists—such men as Cimabue, Giotto, Brunelleschi, Donatello, Alberti—already had new conceptions of space and time. Perspective, color, line, were all being rethought.

In 1425, Felice Brancacci settled on an odd couple of artists and apparently gave them a joint commission for the frescoes in his chapel. One of the pair, a sort of wunderkind in his early 20s, was nicknamed Masaccio (Scatterbrain). Perhaps the name stuck because, as art historian Giorgio Vasari said, the young artist refused to pay attention to the cares and affairs of the world, instead devoting himself exclusively to his art. He had disturbing, newfangled ideas about composition and about how to render the roundness of human flesh on the flat surface of a plaster wall. To bring a more mature hand to the project, Brancacci selected an artist 18 years Masaccio's senior, Masolino da Panicale, whose mastery of the delicate nuances of late Gothic painting was well known.

The 12 frescoes were painted in two rows, six above and six below, that run around three walls of the chapel. The top row starts and ends at the beginning—in Eden—with one of the most famous events in the broad sweep of Judeo-Christian doctrine: on the right, Masolino depicts Adam and Eve at the moment just before the Temptation and the Fall (right). Balancing that view on the left side is Masaccio's interpretation of the expulsion from the Garden (pp. 94, 95).

The painters have left us two distinctly different views of the hapless pair. In the "before" scene, Masolino is scrupulous about the details. The fig (not apple) tree is botanically correct. Its leaves and even the glistening seeds of its fruit are carefully depicted. And there is no need for Adam and Eve to cover themselves. Eden was created without a hint of evil. By contrast, meticulous draftsmanship was the last thing on Masaccio's mind. Working swiftly on his "after" view, with confident strokes he congealed the nightmare. In a vain attempt to hide, Eve covers herself.

The author, a frequent contributor to SMITHSONIAN, *teaches a course on Shakespeare at the University of Maryland and has written television documentaries.*

Counterpart of Masaccio's *Expulsion* is Masolino's more static and formalistic *Temptation of Adam and Eve.*

Masaccio's *Tribute Money* depicts the Gospel story: in center, tax collector asks Christ for tribute.

Adam is crushed; cradling his head in his hands, he is overcome with remorse.

How wrong it was for an anonymous 17th-century prude to cover the nakedness in both paintings with a few impertinent leaves and branches (a tempera overpainting that was easily removed in this cleaning). It shatters that significant distinction between the world before the Fall and after.

Masaccio's *Expulsion of Adam and Eve from Paradise* is one of the most prominent paintings in the history of Western art. Had it stood alone, it might have attracted less attention. But here in the Brancacci Chapel, firmly connected to the work of Masolino, it shines all the more. Opposites are yoked together, as if art history were happening right before your eyes. The *Expulsion* is so affecting that the tragedy is palpable. A hovering angel (so foreshortened that it appears ready to pounce) presides over the scene, driving Adam and Eve out into a world where toil and hardship and death will be their lot.

Christ then directs Peter to water, where he finds coins in the mouth of a fish (left). Peter pays up (right).

And yet there's something more. In this period, the loss of paradise was also known as the "fortunate fall," the *felix culpa,* one that ironically proved to be good for mankind. So behind the immediate guilt and shame is the abrupt realization that this mistake allowed mankind to earn heaven. In the perfection of Eden, it made no sense whatsoever to speak of sacrifice, or the reward of choosing the good. John Milton, who traveled to Florence in 1638, long before he wrote *Paradise Lost,* and who may well have seen these frescoes, said it best: "I cannot praise a fugitive and cloistered virtue, unexercised and unbreathed, that never sallies out and sees her adversary, but slinks out of the race, where that immortal garland is to be run for, not without dust and heat."

Masaccio must have believed that. This Adam and this Eve are hardly two worthless, broken figures who have just ruined mankind. Human and vulnerable, they are still somehow heroic. In contrast with Masolino's Adam, the feet of Masaccio's Adam are firmly on the

Masaccio's vivid naturalism lends authenticity to the rite of salvation in *Baptizing the Neophytes.*

All but Masaccio's head of a Carmelite (second from right) were redone by Lippi, who left out monk's feet.

ground. He walks on to meet the future, rather than floating helplessly above the turf like Masolino's figure.

The rest of the top register of frescoes and all of the bottom are devoted to the life and acts of Saint Peter. Here we can see the Masolino-Masaccio collaboration, highlighting as it does now the turning point between Gothic and Renaissance art.

Look, for example, at the huge fresco next to *Expulsion of Adam and Eve from Paradise.* Called *The Tribute Money* (pp. 98-99), it recounts the miracle in which the cash to pay the Roman tax collector was found by Saint Peter in the mouth of a fish. If the face of Christ seems familiar, it should be—it resembles that of Adam in Masolino's *Temptation of Adam and Eve.*

Out from under the plaster

Historically that would make sense because Jesus was often considered the New Adam, the man who made the world new again through his sacrifice. But Masolino's Adam is brittle and bisquelike, pale as a doll. The same face in the hands of Masaccio is vivid, the shadows and highlights across the face and neck projecting Adam out from the cold, flat plaster in which he has resided for five centuries.

Before the cleaning, some scholars thought that Masolino had painted the face of Christ, who appears left of center in *The Tribute Money.* Now, with the cleaning, all doubts seem to have been removed: experts agree that the face is by Masaccio.

God is in the details, a wise man said. So it's rewarding to ruminate over these frescoes. In *The Tribute Money* a ruddy Saint Peter struggles to extract money from a fish he has just landed. Behind the crippled and homeless in *Saint Peter Healing the Sick with his Shadow* (p. 96), formidable doors slam shut, displaying their locks and their forbidding nailheads. And the three figures at the far right of *The Raising of the Son of Theophilus and Saint Peter Enthroned* are thought to be Masaccio and his architect-heroes Leon Battista Alberti and Filippo Brunelleschi.

In *Saint Peter Baptizing the Neophytes* (above) a big-shouldered youth kneels in a chill stream while rivulets of water mat his hair and run off in the tangles. Behind him, a waiting boy clasps himself so tightly to stop his shivering that he has become rigid. In the background, sawtooth mountains are rendered with confident, deft strokes. This is not pretty Tuscany but the real world, unromanticized and threatening.

It is hard to overemphasize the power of these frescoes. But where does the power come from? More than anywhere else it comes from the sense that Masaccio studied nature minutely, and painted human figures that were remarkably pliant and passionate. And his architectural renderings impress us because of his

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Close-up from Lippi's *Liberation of Saint Peter*, after cleaning, shows an angel guiding Peter to freedom.

fluency with perspective. His first biographer, Giorgio Vasari, said that "everything done before his time may be termed paintings merely, whereas his creations are real, living and natural."

Most of what we know of Masaccio's short life comes from Vasari (1511-1574), whose *Lives of the Most Eminent Italian Architects, Painters and Sculptors* appeared more than a century after Masaccio's death. Vasari was court painter to the Medici and in his writing took pains to make his masters—and the painters they favored—look good. His own hero was Michelangelo, and so when he tells us that the great one went out of his way to study Masaccio, he is making a large claim for Masaccio's own genius.

The basics come from Vasari: that Masaccio was born to Giovanni di Mone Cassai and Jacopa di Martinozzo in 1401 and was named Tommaso after the saint. That his father, a solicitor, died young and that the family lived frugally. That young Tommaso entered the doctors, apothecaries and shopkeepers' guild in 1422 (painters joined that guild because their paints and supplies were composed of many of the same elements as were medicines and poultices). And that between 1422 and 1428, when he died in Rome at age 26, he had been able to complete only a handful of works, his two greatest commissions being the Brancacci Chapel and, across the Arno in the church of Santa Maria Novella, *The Trinity*. And that his own life had been "sober and unadorned."

The chapel has had a checkered history, almost from the start. In 1434, the Brancacci family fell afoul of the Medici and were banished from the city. Later the chapel was rededicated to the Virgin Mary after the installation of a 13th-century Madonna of the People, highly regarded for its healing powers. The name change served to disconnect the art from the specter of Rome, since the pope was always considered a spiritual descendant of Saint Peter.

Originals beneath the marble altar

A monumental altar in honor of Our Lady of the People was erected in the chapel, eradicating a crucifixion of Saint Peter below the Gothic window and parts of several other frescoes inside the window well. The marble altar effectively sealed off the edges of the frescoes, protecting them as if in a vacuum. The recent cleaning has revealed much of the original plaster behind the altar, including two handsome portraits of an unidentified Renaissance man (p. 96) and woman, the man by Masaccio, the woman by Masolino, judging from the treatment of the faces.

Perhaps the greatest surprise of the restoration is the uncovering of one of Masaccio's architectural details, a line that continues around an uneven corner of the window frame. Up close, the line curves, but from any angle back in the chapel itself, it appears straight and in perfect perspective. Seeing that for the first time is like finding a five-century-old message in a bottle.

It is thought that in the 1480s the Medici hired painter Filippino Lippi to excise and redo some of the faces in Masaccio's work, especially in *The Raising of the Son of Theophilus*, removing countenances offensive to the Medici and inserting friendly ones. Specifically, on the left of the painting, in a group of five people, only the Carmelite father (in the white robe) is an original Masaccio face. Curiously, Lippi, who repainted the bodies as well, seems to have forgotten to put feet back under the Carmelite (detail, p.100).

How do we know reworking was done? Because when you rework a fresco, you first gouge out the plaster to a depth of about an inch and then replace it with new, wet plaster on which you paint the new subject. When the work dries, a raised seam remains. Ordinarily, a seam delineates a day's work (*una*

giornata) for the original painter. But in this case, the seam runs completely around the head of the unoffending Carmelite, showing that Lippi replaced Masaccio heads to the left and right of him. The Carmelite he left alone, and to posterity the friar is worth his weight in gold. He shows the Masaccio way with light, his face illuminated in a manner that Lippi was incapable of doing a half-century later.

Lippi also completed much of the work that Masaccio and Masolino had left undone (or that had been destroyed). Of the 12 major frescoes, three are entirely by Lippi. Lippi's colors and draftsmanship are pleasing, but his people do not project, do not burn themselves into one's consciousness like Masaccio's.

On January 28, 1771, the chapel survived a fire that almost totally destroyed the rest of the church. (Heat, however, chromatically shifted some of the pigments. In the left section of *The Tribute Money*, close to the nave where the fire raged, Saint Peter's robe became a reddish color, not the golden-yellow originally painted at the right. Because of this cleaning, scholars have come to recognize the alterations in hue.) After the fire, the church was rebuilt around the old chapel, but the frescoes were not cleaned until 1904, eighty years before the present work began.

Fifteen years after his death, Masaccio's body was brought back from Rome to the Carmelite church in Florence, the scene of his greatest triumph. No memorial was raised at the time. But long after that, the 16th-century poet Annibale Caro composed this epitaph, which precisely sums up his value to our age and to his:

I painted, and my picture was like life;
I gave my figures movement, passion, soul;
They breathed. Thus, all others
Buonarotti [Michelangelo] taught; he learnt from me.

Detail of Florentine building is from Masaccio's *Distribution of Alms and the Death of Ananias*, said to have been done during his last days at work in the Brancacci Chapel, just before he left for Rome.

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By Robert A. Hutchison

The Bible as field guide for a wildlife restoration dream

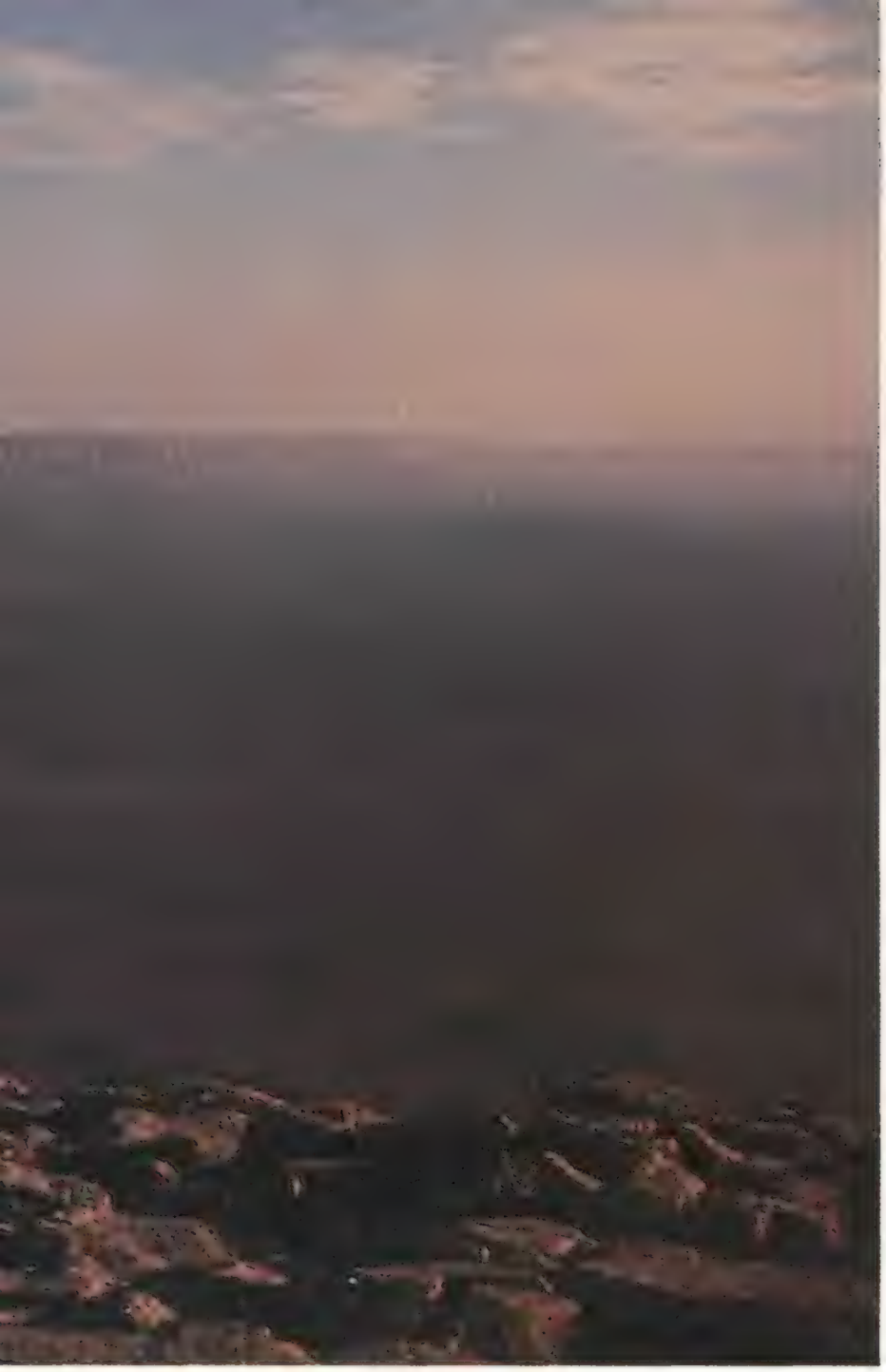
Although their country is tiny and subject to enormous pressures, Israeli biologists are bringing back the animals that Abraham knew

> The high hills *are* a refuge for the wild goats; *and* the rocks for the conies. . . . The young lions roar after their prey, and seek their meat from God.
>
> Psalms 104: 18, 21

> . . . the daughter of my people *is become* cruel, like the ostriches in the wilderness.
>
> Lamentations 4:3

We had left Ramat Gan outside Tel Aviv at 5:30 A.M. in an unmarked Peugeot 505 bristling with antennas. And now we had arrived at our first stop: Makhtesh Ramon, a 25-mile-long crater in the Negev mountains south of Beersheba. Until 1983 the Israeli Air Force had used it for low-level combat training. Wildlife had been nonexistent. Today it is a national geological park and a nature reserve where onagers (Asiatic wild asses), Nubian ibex, gazelles, jackals, striped hyenas and desert foxes roam.

To watch fawn-colored onagers grazing on the crater floor is to see a major step toward a remarkable goal. None had been seen in the wild since the 1930s,



Young male Nubian ibex tries a path down the rocks in Ein Gedi Reserve. Species has recovered nicely.

Northern cliff of Makhtesh Ramon, a geological and wildlife reserve, rises 600 feet above crater floor.

and yet they are emblematic of the countryside: ". . . who hath loosed the bands of the wild ass?" asks the Book of Job. "The range of the mountains *is* his pasture, and he searcheth after every green thing."

The ultimate ambition of the Nature Reserves Authority, established in 1963, is nothing less than to return to their natural habitat the flora and fauna that lived here when Abraham entered Canaan. For these wildlife managers, the Bible is the textbook.

Israel is part of a land bridge, a crossroads where the flora and fauna of Africa, Europe and Asia meet. Its central feature is the Jordan Rift Valley, part of the split in the Earth's crust that runs from Turkey to Tanzania. Our kind has lived here at least since *Homo habilis*; Neanderthal and Cro-Magnon overlapped here for 60,000 years. Once it was part of the Fertile Crescent, where in the dawn of civilization human beings first cultivated fields and orchards, and perfected animal husbandry. The land has been scarred by war since the beginning of history.

My guide was Uri Baidats, a former army colonel who succeeded the first Authority director in 1983. I had first met him in Switzerland, where he explained to me the organization's goals. As part of the dream of restoring the biblical fauna, the Authority is both developing nature reserves and protecting wildlife. Biologists are making ecological surveys of the entire country, trying to strike the best possible balance between the needs of farmers and those of wildlife. The Authority concerns itself with preservation of the quality of the environment and with the beauty of the landscape. Considered equally important is education, especially of the one million schoolchildren who visit the reserves each year.

It was Baidats who had talked the military out of using Makhtesh Ramon as a training ground, and who had decided to release inside its walls a small herd of onagers obtained earlier from another country. Onagers are difficult to manage: they can gallop at 45 miles per hour and they range over long distances. Two have wandered across the border, where they were shot by Jordanian soldiers. Yet here we were, in a park where onagers grazed as though they had always lived here in quiet tranquillity. Baidats' biblical zoo was growing.

Photographs by Steve Kaufman and Richard T. Nowitz

Robert A. Hutchison

Uri Baidats, director general of the Nature Reserves Authority, climbs hill near Taba on Gulf of Aqaba.

White oryxes are active mainly at night; during the day they find what shade they can under acacia trees.

A better place to see ibex, he told me, was at the Ein Gedi Reserve on the shores of the Dead Sea, where David fled to escape the wrath of Saul. When I went there later, walking up to one of its hidden waterfalls, I counted 40 of the graceful beasts scampering on the cliffs. The ibex, mentioned in Psalm 104's inventory of animals, was long thought to have body parts and organs with therapeutic qualities. Middle Easterners and Africans considered it a walking pharmacy; so did Europeans (SMITHSONIAN, December 1987). Consequently, from Syria to Ethiopia it was hunted almost to extinction. But since the Authority began enforcing environmental laws, the ibex has made a remarkable comeback.

Makhtesh Ramon is not your run-of-the-mill wildlife preserve. The word *makhtesh* means a mountain whose top of hard limestone or dolomite rock has eroded away to reveal a friable inner core of sandstone. The softer sandstone is subsequently washed out of the mountain root by newly born rivers and occasional floods, leaving a crater like a gaping gash in the Earth's crust, the planet's innards exposed in strange geological shapes formed of rose sandstone, rust-orange and copper-green outcrops, the black of lava domes. Ar-

The details of their return to Israel are still kept secret; an unnamed zoo handled an elaborate trade.

Once found only in the Negev, the caracal—a nocturnal desert cat—has expanded its range throughout Israel.

chaeologists have found a 70,000-year-old work site from the period known as the Mousterian; paleobiologists have determined from fossilized tree trunks and pollen that the area once was covered with humid-zone forest, an ecosystem rich enough to support a sizable human population. The Authority intends to transform it into an open-air university, with research facilities and a library devoted to the study of this geological phenomenon.

After leaving Makhtesh Ramon we made a quick stop at the Red Canyon. A landmark carved out of Nubian sandstone, it is 600 yards long, between 1 and 3 yards wide, and as much as 100 yards deep. The rose-colored sandstone had been twisted into strange forms by the flash floods of the millennia, creating a place uniquely beautiful even in the crushing late-morning desert heat. Here the main problem is trash left by tourists; we listened to the chief ranger argue that the only solution is a full-time ranger on the site. This may be beyond Baidats' budget at the moment, but we did our part: each of us carried a load of trash back to the parking lot.

Then we were on the road again, driving the last 20 miles south to Eilat on the Gulf of Aqaba, where the Israeli authorities had recently returned the seaside resort of Taba to Egyptian control. The army wanted to bulldoze the tops off several hills for observation posts that would overlook the new border-crossing point. Baidats said no, arguing that the entire area around Eilat is a nature preserve. A roadside confrontation with the general in command of the sector ended in victory for Baidats' powers of persuasion.

Baidats' job is not simple. "I'm fighting against time," he says. "I'm fighting not only the army but new settlers, developers, industry, even some sectors of the government. Everyone has plans for reshaping the country and they're creating intolerable pressures on the environment."

(Private groups have enlisted in the war. The Society for the Protection of Nature in Israel has joined the Authority in disputing air force plans to start using a nature reserve in the Negev for training. The air force needs a new spot because of a 16-antenna transmitter array that the Voice of America, Radio Free Europe and

Geneva-based financial journalist Robert Hutchison is organizing a second expedition to search for the Yeti (aka the Abominable Snowman) in the Himalayas.

Radio Liberty are building next to the present training site: the air force says transmissions from the antennas will interfere with the electronics on its jet fighters. The society also worries that the powerful radio signals will interfere with the navigation of the millions of birds that migrate through Israel every spring and fall, moving between Africa and Europe.)

In carrying out his mandate, Baidats started almost from scratch. The Holy Land fauna once was plentiful and diverse. Historian Josephus Flavius recorded that during a day's hunt, Herod the Great killed 40 different kinds of animals, from lions to wild boars. No great damage was done for nearly two millennia afterward, but in 1868 the shotgun was introduced by German settlers; the last surviving crocodile was shot ten years later. It was early in this century, however, that the bottom fell out. Most of the area's forests were cut then —with a disastrous impact on wildlife—to provide fuel for the steam locomotives used by the Ottomans as they extended their rail network from Damascus to Medina, Haifa, Jerusalem and Beersheba in the Negev. Hunting pressures continued to increase. A German trophy hunter bagged the last brown bear in 1917 near the foot of Mount Hermon; in 1921 the last deer was killed.

Overgrazing wreaked havoc as well. A Bedouin tribesman counted his riches by the numbers in his flocks of goats, sheep and camels—a roaming bank account that paid dividends in milk, wool and meat but that devastated the countryside. A browsing goat can do as much damage to the environment as a man with a bulldozer. Camels, too, eat anything green, no matter how fibrous or thorny. Both will eat every seedling that sprouts and every leaf that unfurls. Both thrive in arid terrain, guaranteeing that while they have free reign the land will remain barren.

With goats gone, the grass is greener

But for the past 40 years or so Bedouin access to the border areas has been restricted, first for security reasons and later because of new environmental laws as well. Few camels or goats browse there any longer.

"You can clearly see the boundary line between Israel and Egypt in satellite photos," said Ezry Alon, reserve manager at Makhtesh Ramon. "On the Egyptian side the surface is light or reddish brown, while the Negev appears darker, reflecting more vegetation."

So severe was the carnage that when the Authority was created 25 years ago, no ostriches, lions, fallow deer, oryx, wild asses or bears remained in Israel; the desert leopard was presumed extinct, and more than 50 other species of mammals known in biblical times were endangered—from the long-fingered bat to the Persian squirrel; from the otter to the shy but impudent sand cat. Fewer than 100 gazelles could be found from one end of the country to the other, and perhaps only 150 ibex.

A quarter-century of replanting forest and brush cover, and restoring animals, has worked wonders. In the latest census more than 10,000 gazelles were counted, and nearly 2,000 ibex again roam the Judean hills, the mountains of Eilat and the Makhtesh Ramon. Wild boars thrash through the Jordan's riverside thickets and have migrated to the surrounding highlands. Six desert leopards have been radio-collared, two are in captivity and at least seven others have been spotted.

Army maneuvers on nature reserves

Because Israel is a crowded country, about the size of New Jersey, the pressures on its land are immense. Opposition to the creation of the Authority came from two quarters: farmers, who often regard wildlife as an unnecessary pest, and the army. The first reserves were created from the inventory of the Israeli Defense Force training ranges.

The Authority now controls 13 percent of the country, in 159 reserves ranging in size from 2.5 to 60,000 acres, spread from the sources of the Jordan on the northern border with Lebanon and Syria to the coral reefs of Eilat in the south.

Seventy percent of Israel's nature reserves remain army training areas. "With the general staff we have no problem," says Baidats. "It's with the soldiers in the field. When, seven years ago, I went to see the chief of staff to complain about the problems we were having with individual units, he gave me a special budget for three more rangers—to make sure that standing orders on environmental protection were respected. Now no large maneuvers are held without our rangers being on the headquarters staff and with the troops."

Enforcement is handled by a special unit of 32 rangers known as the Green Patrol. They help insure that the army respects the integrity of the reserves and that nature lovers do not get in the way of the military. They have established corridors for tank training exercises; maneuvers outside these corridors are prohibited.

At sunup the next morning we headed for Hai-Bar Yotvata, 25 miles north of Eilat on the Wadi Araba Road, where the Authority runs a breeding station for endangered species, a 7,900-acre park open to the public. Among the animals being raised there are the almost-extinct desert gazelle, the endangered African addax (an antelope), onagers and the Somali wild ass, commonly known as the wild ass. The presence of the latter attests to the Authority's penchant for James Bond-style operations. Once common in the Wadi Araba acacia savannah shared by Israel and Jordan, the fleet, gray-coated beast had been hunted to extinction throughout the area. In 1973 an animal dealer in

Dorcas gazelle gets all the water it needs from the plants it eats.

The striped hyena has never been in danger; it is common throughout the country. But its habitats have been much reduced in the past 20 years.

African wildcat, predecessor of the domestic species, survives in reserves but is endangered; its current population is unknown.

A nursing onager symbolizes the success of the species' reintroduction into Israel.

Youngsters feed addaxes (a species of antelope) to supplement sparse forage in the arid Hai-Bar Reserve. The 7,900-acre park, open to the public, is used primarily for the breeding of endangered animals.

Addis Ababa spotted what may have been the world's last herd in Ethiopia's Danakil desert. The dealer captured six of them and contacted the Authority, which arranged to fly the wild asses to Eilat on two air force Hercules transports.

On the same Noah's Ark mission, 18 Ethiopian ostriches were brought back as well. The last known Middle Eastern ostrich, slightly smaller than its Eritrean relative, was carried off by a flash flood in south Jordan in 1966. Only a half-century before, they had been fairly common in the deserts of Syria, Iraq and Saudi Arabia.

The most elaborate reintroduction scheme, the details of which are still secret, involved the white oryx, considered today one of the world's rarest animals, although in the 19th century it ranged throughout the Middle East. In 1962 the World Wildlife Fund, fearing extinction of the species, began Operation Oryx to form an international breeding stock, dubbed the "world herd" (SMITHSONIAN, May 1980). Israel, in spite of its interest, was excluded.

In the United States, the Phoenix Zoo provided a home, and in time the herd grew to 150 animals. Four were taken to Jordan, where they were joined by four more from Qatar. At the Shamari Wildlife Preserve in eastern Jordan, they became prolific breeders. Several dozen more were sent to Oman and, in 1982, released into the wilds of the Jiddat al Harasis plateau. They are also apparently thriving.

Ten years ago the Authority acquired six oryx of its own from an undisclosed Middle Eastern source in exchange for an African gorilla, in a deal handled by an unnamed zoo. The oryx were secretly flown to Eilat and became the most pampered charges at the Yotvata preserve. The Israeli herd now numbers 37 and a decision is imminent on whether to release some, together with ostriches, into Makhtesh Ramon.

Other animals being raised for eventual release into the wild are presenting painful ecological dilemmas. In some parts of Israel not cleared for agriculture, for example, the land has been taken over by a thick maquis scrub. The spreading foliage of the pistacia and scrub oaks tends to grow outward instead of upward, until it becomes so thick as to be impenetrable, the "closing of the wood."

Gazelles are not significant grazers in such areas,

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**J.D. Power and Associates 1989 Initial Quality Survey covering November and December 1988. Based on owner-reported problems during the first 90 days of ownership.

A rare and welcome sight is Shulamit Waterfall, one of several along the wadis of the Ein Gedi Reserve.

according to Uriel Safriel, the Authority's chief ecologist; they are not strong enough to push between the trees. One solution is the fallow deer, an animal once so abundant that its meat graced the table of King Solomon every day; it is now perilously close to extinction. The Authority has more than 30 in its herd, descended from four females, which were brought from the Shah of Iran's private reserve on the last El Al airliner to leave Teheran during the prerevolutionary turmoil, and one male, which came from Iran via the Netherlands. Biologists worried that they might not adapt to their new home. Largely because of the round-the-clock efforts of a single ranger, however, they survived and went on to produce the current herd. Now the Authority staff, building on the success with the onagers, wants them released into the wild immediately. But Safriel worries that they could do too well in the wild and have a negative impact on the habitat; their predators are long gone.

The deer are not safe where they are, however. Arson aimed at the country's forests has been an important part of the *intifada*, the Arab uprising. In 1988, fires charred 38,000 acres, compared with only 3,000 in 1986. In May of last year when I drove north to visit the Mount Carmel reserve near Haifa, smoke was rising from a half-dozen out-of-control scrub fires. Last September 20, five fires broke out in the oak-and-pine forest on Mount Carmel and burned out of control for two days. Included in the 2,000 acres that burned was a small breeding sanctuary; the fire killed 22 animals there, including all the roe deer and two of the fallow deer; several more were injured.

A caracal caught in a chicken coop

While we were at Yotvata the radio in the ranger's hut crackled into life, and a voice reported that a caracal had been caught overnight in a trap in a chicken coop at Hazeva, 90 miles to the north. The caracal is a magnificent feline with long, black, tasseled ears (p. 109). The cats, which weigh from 20 to 35 pounds, have developed a taste for chickens being raised in Wadi Araba's farming settlements. We drove to the spot and watched as the district's chief ranger, Menachem Abadi, tranquilized the animal and tagged it before setting it free. The hope is that the trauma of capture will discourage further forays into coops. Caracals caught a second time are released in remote areas.

For our final stop we climbed into Abadi's jeep and set off for Wadi Zin oasis, a few miles south of the Dead Sea. Abadi had been monitoring a pollution problem there: waste from flotation pools at the nearby phosphate works was seeping into the wadi's stream, fouling the water and killing vegetation along its banks. We checked the oasis and, as darkness descended, drove to the open-pit phosphate mines themselves to make sure their giant crushers were not gobbling up unauthorized tracts of countryside. Months earlier Baidats had obtained a court order restraining the company from tearing apart the Mount Zin "potato field," a barren but remarkable geological site he had visited as a child. According to some biblical scholars, Aaron, brother of Moses, lies buried on Mount Zin.

The base of the conical mountain was covered with potato-size lava nodules, whose bright purple color contrasted with the white dust from the mines. Huge Euclid trucks, loaded with the white fertilizer that Israel exports to half the world, rumbled along dirt roads amid the quarries and slag heaps. Nothing grew there. No animals stirred in this eerie, unwelcoming place. "God created the Dead Sea and Man the dead land," mused Abadi.

Baidats has hopes for the future that go beyond the borders of Israel. "From the nature conservation point of view," he told me, "we are a kind of island in the Middle East. We now have herds that are extinct

elsewhere in the region. Conserving these herds is important to human culture and the worldwide conservation effort. But because we are an island, we are very concerned about epidemics."

In 1985 windblown hoof-and-mouth spores crossed the border from Jordan and infected the gazelle herds on the Golan Heights and around Mount Gilboa. The virus also infected cattle in the region, just as it took its toll of Jordanian cattle. At the height of the epidemic, Baidats feared that not a single gazelle in the north of the country would be spared. When the disease finally subsided six months later, more than 2,000 gazelles had died; only a few hundred survived. Baidats says that if his rangers had been able to work with the veterinary authorities in Jordan, the outbreak might have been more quickly contained.

"I am looking forward to the day when we can work with our neighbors. I am convinced that day will come, and when it does a shared concern for nature conservation might well reinforce the will for peace," he said. Baidats has already tried to establish closer contact with his Egyptian counterparts but, he says, "they do not have the same awareness." At an international conference in Costa Rica last year, he recalls, his attempts to open unofficial channels with the head of the Jordanian nature authority were rebuffed.

We still had another three-hour drive before reaching home. As soon as the car's telephone was within range, Baidats called his wife to let her know we were on the way, so she could have a late supper and ice-cold vodka waiting. The next day he would be on the job again before sunrise.

Ostriches from Africa have been introduced to fill the niche left empty by the extirpated native species.

The first birds came from Ethiopia on the plane that returned Somali wild asses to their ancestral ranges.

By Sue Arnold

The Sunday drivers are classics at the Brighton Run

One day every autumn, to the delight of all, the highway from London to the sea is reclaimed by a cacophonous procession of pre-1905 cars

Awaiting the start of the Run at Hyde Park, a driver in Edwardian dress leans on a 1903 two-cylinder Brown.

It is 7 o'clock in the morning on the first Sunday in November and, would you believe, there's already a traffic jam at Hyde Park Corner in London. Reed Martin from Cabin John, Maryland, not only believes it—he's part of it. Perched aloft behind the steering tiller of his black-and-red 1900 Knox three-wheeler, a long woolen scarf wound around his neck against the chill wind, an expression of deep concentration on his face, he is one of 380 drivers taking part in the annual London-to-Brighton Veteran Car Run beloved, nay *idolized*, by antique-car enthusiasts the world over. Despite the large number of foreign entries every year, from Sydney to Stockholm to San Francisco, the Brighton Run, as this unique event is affectionately referred to by participants, is as English as Yorkshire pudding. And since the release of the film *Genevieve*, set on the Brighton road in the early 1950s, the Run has become as much a part of the English social calendar as Wimbledon, the Derby and Guy Fawkes Day.

Regardless of the weather, every November two million spectators line the 57-mile route from the capital to the coast to watch the old masterpieces rattle by. "Veteran cars," the program calls them, but to the untutored eye some of these extraordinary vehicles look more like motorized baby carriages, steam-driven lawn mowers or even sewing machines on wheels. Every road converging on the Serpentine Road in Hyde Park, whence the Run begins, is chockablock with ancient driving machines—Darracqs, Panhard-Levassors, De Dion Boutons, Milwaukee Steamers, Lanchesters, Napiers, Vulcans, Minervas. They're all here, names that conjure up images of a golden age when ladies wore veils, gentlemen took snuff, and cars were as individual as the people who drove them and not just lumps of pressed steel off a production line. To qualify for a place in the Brighton Run, a car must be pre-1905. The oldest entry—possibly the oldest running car in the world—is the 1884 De Dion Bouton et Trepardoux once owned by the Marquis de Dion. It runs on coal and carries enough fuel to go 35 miles, but needs 45 gallons of water every 20 miles.

The Run doesn't start till 8 A.M., but already some of the cars have broken down. A yellow 1902 Wolseley is being pushed down Constitution Hill alongside Buckingham Palace by two men in frock coats and top hats. Farther on, in the middle of Park Lane, three pairs of trousered legs are protruding from beneath the chassis of an 1898 Delahaye, steaming quietly from both ends.

This is Reed Martin's second crack at the Run. In 1988, instead of his wife, Barbara, sitting beside him in

And they're off!, as a 1902 two-cylinder Panhard-Levassor with a covered tonneau body gets under way. The goal for this carload and all the others is to cover the 57-mile distance in eight hours—then celebrate.

Photographs by Adam Woolfitt/ Susan Griggs Agency

The Martins' Knox three-wheeler has broken down a half-dozen times. But goodness—what a ripping hat!

Followed by a 1903 De Dion Bouton, Reed and Barbara Martin sail past a sidelined 1903 one-cylinder Barré.

the passenger seat, his friend and ace mechanic, Joe Clements, was with him. (In today's Run, Joe will be driving another machine from the Martin stable.) In 1988, Martin and Clements took 5 hours 20 minutes to get to the coast, well within the 8-hour time limit that guarantees drivers a coveted finisher's medal.

The Knox cruises happily at 15 miles per hour, so they would have got there sooner if they hadn't run into a little difficulty 30 miles out of London when their double dripper dropped off. Those of you familiar with the working parts of a 1900 Knox three-wheeler will not need to be reminded that this particular vehicle has two drippers—one to oil the piston; the other, a double dripper, to lubricate the crankshaft. It was this item, 12 inches long and 5 inches in diameter, made of bronze and weighing some ten pounds, that went AWOL somewhere between South Coulsdon and Redhill. Martin discovered the loss on one of his routine checks, whereupon he immediately flagged down oncoming motorists to inquire if by any chance they had spotted a large shiny object lying on the highway or lurking in the grass verge. Nobody had.

"So what could we do?" recalls Martin, a man not easily given, one suspects, to panic or pessimism. "We were either dead in the water, as they say, or we needed a plan. 'Improvise,' says Joe; 'that's what we gotta do if we want to make it.' He said it was his guess that, since we were using 50-weight oil and the temperature was at 40 degrees, it would take five to seven minutes for the oil on the crankshaft to be used up. 'So,' says Joe, 'if we stop every seven minutes and I hop out, put my finger over the oil can and trickle oil into the two tubes leading down onto the crankshaft, we should be OK.' And that's exactly what we did for the next 25 miles."

You will be relieved to hear that someone did eventually spot the missing dripper, which was reunited with its grateful owner. For his part, Martin picked up a motley assortment of antique hubcaps, door latches and brass parts along the A23, and was thus able to announce at the gala banquet that evening, "Ladies and gentlemen, I have some vehicle parts which some of you may recognize. . . ."

So much for the 1988 rally. Before accompanying our hero from Maryland on the '89 Run, a word or two about the origins of this unique event might be helpful. The first London-to-Brighton Veteran Car Run took place on November 14, 1896. It celebrated the repeal of the Red Flag Act of 1865, which had required every self-propelled light road locomotive to be preceded at 60 yards by a man carrying a red flag. The red flag warned bewildered wayfarers (mainly four-legged) of an oncoming car, and gave pedestrians who may never have seen one before—and might therefore be rooted to the spot with terror—a chance to leap to safety. The speed limit was also increased from 4 mph in the country and 2 mph in town to a heady 12 mph,

In another unplanned stop along route, Martin tinkers with a troublesome intake-valve mechanism.

thereby opening the floodgates to such celebrated fictional speedsters as Toad of Toad Hall and Miss Agatha Runcible of *Vile Bodies.*

The Red Flag Act had been aimed at suppressing the steam-driven road coach, to the great advantage of the horse-drawn-coach and railway lobbies. Had the act not been repealed some 30 years later, it would certainly have succeeded in stifling British motoring at birth. Most of the vehicles bumping along the highways and byways of Britain in the dying decades of the 19th century were imports from France and Germany; emancipation from the act brought with it the birth of the British car industry.

Thirty-nine cars lined up outside the Metropole Hotel in Whitehall, London, for that first Run to the other Metropole Hotel on the seafront in Brighton. Jerome K. Jerome was among the spectators who cheered those first intrepid pioneers in a regular pea souper of a fog. Lord Winchelsea waved them off and ceremoniously shredded a red flag on the spot. *Autocar,* a motoring magazine, printed its entire edition in red for the occasion. People threw rice at the cars passing over Westminster Bridge, as if the passengers were young elopers returning from Gretna Green, and a huge banner in Reigate proclaimed "A Welcome To Progress."

Fourteen cars are reported to have arrived on the coast that same day, but because the van carrying the official timekeeper broke down so many times, it was hopelessly late in arriving and we have only hearsay to rely on. There was talk of foul play. A certain Walter Bersey was seen loading his electric brougham onto the train at Redhill, having first smeared its wheels with mud. Three other cars that no one remembered seeing anywhere near the southern suburbs of the capital arrived in Brighton after the London train pulled in.

During the next 20 years other competitions to mark motoring's emancipation were staged to various destinations, but they were races rather than runs, with cash prizes for the first three cars past the post. In 1930 the Royal Automobile Club took on the role of organizer for the Brighton Run. That year, a new rule stated that cars had to be at least 25 years old to participate. The pre-1905 rule still applies. Also, the competitive element was abolished. Since then, the event has been a run with an average speed of 20 mph.

That, in a nutshell, is the history. We are now following the fortunes of Reed Martin from Maryland, who is upholding a long tradition of American participation in the Brighton Run. There are said to have been two American Duryea vehicles in the 1896 Run and an American driver, for the first time, in 1955.

The author, a columnist for the Observer *in London, wrote about British nannies in January 1984 and on England's Domesday Book in July 1986.*

Surprisingly, for a nation so in love with the automobile, the United States has nothing like the Brighton Run. "You see more pre-1905 antique cars on one November morning in Hyde Park than you would in a lifetime of going to antique-car shows back home," says Martin, by profession a model maker for the Smithsonian's central exhibits office. He brought no fewer than three machines to London for the '89 rally—an 1899 De Dion Bouton tricycle, driven by Joe Clements (the ace mechanic); his 1900 Knox three-wheeler (pp. 118-19); and another Knox, a 1901 four-wheeler piloted by Joe Clements' father, Clarence.

Reed Martin's interest in cars began in his youth. He bought his first car when he was 14, renovated it and then traded up to a Model A Ford hot rod that could do 130 mph. But he learned that speed wasn't everything. He sold the hot rod, bought a 1901 single-cylinder Oldsmobile and never looked back. "Americans are more interested in chrome than in elegance," he says. "Given the choice between a Curved Dash Oldsmobile and a Rolls-Royce, they'd take the Rolls every time." He wouldn't.

Half the fun for Martin is finding the cars. There's a fair amount of detective work involved. Take his favorite, the Knox three-wheeler. When Martin first saw it, in 1963, it belonged to an antique-car collector in Pennsylvania. He made an offer, but the collector declined. Martin finally caught up with the car again 21 years later and bought it.

The second Knox, a 1901 four-wheeled model, had been sitting untouched in a barn in Pasadena, California, for 15 years when he found it. It took him and Clements one hour to get it started. The following week they took the entire engine apart. Well, that's the sort of thing antique-auto aficionados like doing best: start it, strip it, then see if you can put it all back together again. That's the real fun of it.

An infusion of "cough medicine"

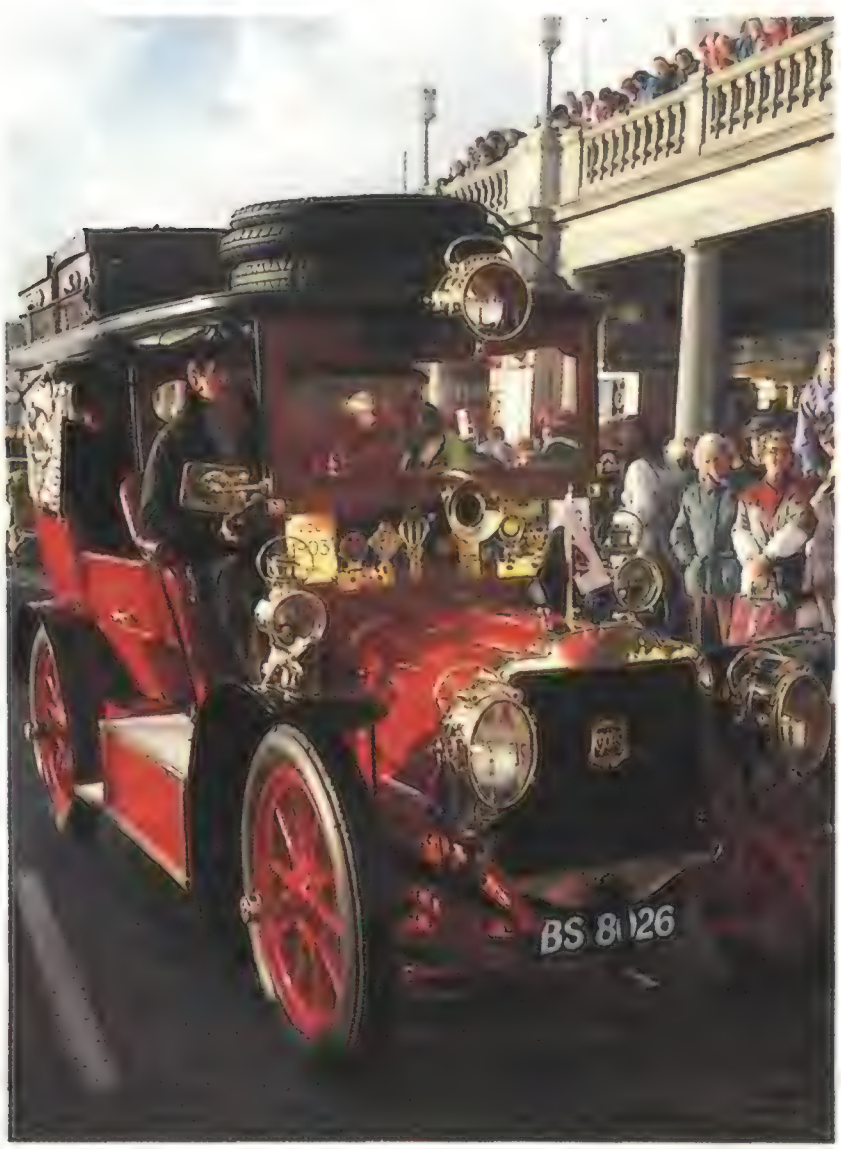
It is 7:45 in Hyde Park and the 380 participants of the 1989 Brighton Run, wheezing and sputtering like a ward full of elderly asthmatics, are lining up, ready for takeoff. Some of them don't look too happy. An old Daimler (no, not the one Prince Michael of Kent used to drive in the Run and that once belonged to his great-grandfather King Edward VII) is having what looks suspiciously like cough medicine poured into one of its gleaming pipes. Maybe it's antifreeze. The mist is lifting, but it is still bitterly cold. Female passengers epitomizing Edwardian elegance in pencil-slim, ankle-length, furbelowed coats, and hats trimmed with silk ribbons, are being tucked into their seats under warm tartan rugs. Their seats are not always where you might expect to find them.

The Barré gets back to speed; the old cars took turns breaking down, then roaring past one another.

Looking like a recent arrival via time machine, a 1903 single-cylinder Humber gets some fine-tuning.

A brassy 1903 Mors with a double covered phaeton body nears finish line on Madeira Drive in Brighton.

Perched in a basket seat between two wheels, a courageous woman rides up front in a 1904 Humber.



The woman accompanying the driver of the 1901 Royal Enfield Forecar, for instance, is lying rather than sitting in a sort of wicker-basket-cum-bath-chair affair attached to the front of the machine. The driver, seated behind and some distance above, looks down over the handlebars at her head, like a dentist about to embark on some intricate bridgework. Then there are those curious rear-facing rumble seats where passengers are stowed rather like luggage. Car No. 112, the four-wheeled Knox, has a nifty fold-down passenger seat at the very front. As an observation platform it's a peach because there is nothing between the passenger's knees and the open road. But for the fainthearted, used to the protection of seat belts and all the ancillary armature of windshield, dashboard and engine, such exposure is daunting.

Spectators posing scores of questions

As the drivers make last-minute adjustments, buffing an already overpolished headlamp here, tightening a nut there, trying out the decibel level on one of those amazing coiled-serpent bulb horns, spectators stroll up and down taking photographs, making notes, asking questions—scores of questions.

Isn't that the famous 1896 Léon Bollée that took part in the Klondike Gold Rush? And yes, that must be the 1904 Humber, which reputedly was bought for 75 pence by its present owner from a Sussex farmer, who was using it to block a hole in his hedge. Car No. 85 trundles past, a 1900 Peugeot double phaeton, famous because it is believed to have completed more Brighton Runs (40 so far) than any other car; not bad for a machine that was found rusting in a French barn.

And every year famous faces show up behind the steering wheels. Alas, the Rainiers of Monaco, regulars in the '50s, are seen no more. But Lord Montagu, whose stately pile in Hampshire accommodates the National Motor Museum, has entered 32 times since 1950. Other stars this time include the drummer from Pink Floyd; the Transport Minister; and Carol Thatcher, pen-pushing daughter of the Prime Minister, wearing a down vest and a baseball cap.

Someone estimated that the cars in Hyde Park are worth around £12 million, or roughly $19.5 million. Certainly, a pre-1905 machine can fetch upwards of £50,000, the record being £71,500 for a 1900 Benz Duc Victoria sold at Christie's last year. The pre-1905 tag is all-important. Not being eligible for the Brighton, to a veteran-car owner, is tantamount to a wine buff's having a bottle of Chateau Latour but no corkscrew. Ironically, the 1904 Spyker that starred in *Genevieve* was later discovered to have a suspect chassis and was reclassified as a 1905 machine, making it ineligible to take part in further Runs.

Colin Crisford

The wheel of an 1893 Benz embodies the beauty and craftsmanship found in the details of many fine old cars. Originally, the car's wooden spokes were painted, but the aficionado who lovingly restored the Benz preferred to show them off under a coat of varnish.

A small crowd has gathered round car No. 75, the famous Knox three-wheeler from Maryland, which earned distinction in 1988, says Martin, for being the first Knox three-wheeler to get to Brighton. Whether they are admiring the complicated mechanism of the double dripper or the equally elaborate mechanics of Barbara Martin's hat is hard to say. The former has already been described; the latter is a wide-brimmed, soft gray affair designed by a Smithsonian model maker who has topped it off with a life-size white dove apparently nesting on the crown. Since, without the dove, Barbara Martin stands 6 feet 3 inches in her socks, the overall effect is, to say the least, stunning.

They're off! Traditionally the cars leave in chronological order, oldest first, in batches of 30 at five-minute intervals. Joe Clements, on the De Dion trike, is the first of the Maryland trio to turn into Park Lane. No one is throwing rice this morning, but as each vehicle leaves Serpentine Road the crowd cheers encouragement and even the straightfaced London bobbies wave their helmets.

Now here's a curious thing. Many of the cars following the vets (they don't close the A23 to normal traffic today, so if you're in a hurry you'd be well advised to find an alternate route) may not be pre-1905, but they look pretty ancient. It seems that anyone with a car more than 30 years old feels a certain empathy with the bona fide veterans, thus the highway is awash with 1950 Jaguar drophead coupes, 1940 Ford Prefects, 1930 Cadillacs, 1920s Bentleys, to say nothing of a plethora of public transport vehicles, antique fire engines complete with rows of sand-filled buckets swinging freely, and pre-World War II omnibuses.

Nipping in and out among these great transport whales are the small schools of penny-farthing bicycles from bike clubs round the country. Their riders, clad only in shorts, singlets and bowler hats, are pedaling furiously. Surely they aren't intending to go all 57 miles; there are some fairly steep hills on the way to the sea. "Sure we are," shouts one bewhiskered biker (facial hair in all forms—beards, mustachios and sidewhiskers—is de rigueur on the Brighton), "and we'll probably beat most of these old wrecks as well!"

One mile south of Hyde Park we come across the first casualty, an 1899 Clement Bayard that has given up the ghost in the shadow of Big Ben, its owner preparing to do battle armed with a wrench. It wasn't far from this spot that last year the truly magnificent 1899 Shearer ran out of steam. The Shearer, shipped over from Australia expressly for the rally, was complete with eight passengers wearing cork-trimmed hats. It looked less like a car than like a stagecoach minus the horses. It belched black smoke all the way to Brixton Hill, where the vibrations finally did in its steel-rimmed, wooden-spoke wheels, one of which virtually disintegrated outside the Nags Head pub. In theory, the vets have to abide by the regular rules of the highway code, but since many of those early braking systems were primitive, hand-operated levers, red lights don't count for much.

Every so often a garage festooned with bunting and offering free coffee courtesy of the Kenco Coffee Company (joint sponsor with the Royal Automobile Club Motoring Services) appears like an oasis amid the relentless concrete of the South London suburbs. Last year, apart from having to stop every seven minutes for

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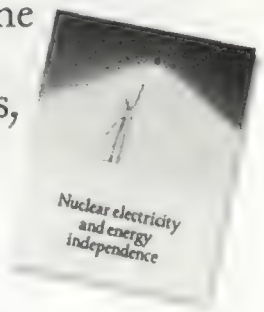

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Completing the prestigious Run, the Martins, all smiles, cross the finish line in front of Brighton Pier.

25 miles to oil the crankshaft, Reed Martin didn't make one official refreshment stop, so intent was he on reaching Brighton. This year he's taking it at a more leisurely pace, with a couple of breaks to socialize a little. "How's it going?" a driver in deerstalker and plus fours asks, queuing for hot soup. "Top hole," replies a fellow buff, "apart from the young bounder who cut across my bow outside Croydon."

The long grind upward at Redhill has to be skillfully negotiated. It has been the downfall of many a Brighton-bound machine in past years. Some cars actually take the incline backward, both because the reverse gear is lower and because the gasoline runs into the carburetor more easily when the front of the car is sloping downward.

It is at the Gatwick oasis, with jumbo jets taking off all round and high-tech everywhere in evidence, that we catch up with car No. 1, the 1884 De Dion. It is standing forlornly on the shoulder, next to a heap of burning coal that its driver has just shoveled from the boiler. Something seems to be amiss.

Warming his hands round his mug of cider, Martin recalls a couple of American diehards who refused to be beaten against all the odds. There was the Californian whose Knox failed to complete the Run in 1987. On his second attempt it sustained a burst tire at Bolney, spattering white-foam tire filler all over the garage forecourt. He didn't have a spare, but this time he wasn't giving up. He found a coil of blue nylon rope, painstakingly threaded it through the spokes and around the wheel, and fashioned a rope tire. The makeshift tire held up, and he made it to Brighton. Then there was the Oldsmobile owner from Minnesota whose chain-driven car failed halfway to the coast. The chain snapped, cutting a hole through the gas tank. He didn't give up either. First, he sent his wife back to find the broken linkage. Then, he secured the chain with a bent nail. Finally, he taped a bottle to the back of the seat with rubber tubing feeding into the carburetor. He, too, made it to Brighton.

So does the Martin gang, all three vehicles arriving less than a half-hour before the 4 P.M. deadline. All that remains is a hot bath, the traditional banquet and then the complicated arrangements for shipping the vehicles back home. There, Reed Martin will be back in his garage with his treasure trove of horns, ignition coils, engine parts and brass headlights. Another year, another Brighton, another Martin machine? Vintage enthusiasts, romantics, ace mechanics, three-wheelers, freewheelers—watch this space.

As the old veterans rest, participants trade stories at a tailgate party around a 1902 De Dion Bouton.

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By Michael Kernan

Richard Burton, a man for all ages except his own

Soldier, scholar, explorer, he shocked Victorian England with his excursions into the taboo

"Ruffian Dick" was in his 50s when he sat for this portrait, but age hadn't mellowed his ferocious expression. The cheek scar came from a Somali spear.

Sir Richard Francis Burton, the original Richard Burton, the explorer who didn't quite discover the source of the Nile, was surely a time traveler who landed in the wrong century. It somehow seems fitting that only now, 100 years after his death, a film about his greatest adventure, the ill-starred 1857-59 expedition into Africa with John Speke, has just been released and the man himself is once more in the public eye. Not that he ever completely disappeared; at least 12 biographies have been written about him, and a novel or two.

If anyone was ever, as the cliché goes, "ahead of his time" it was Richard Burton. In an age when many of his countrymen looked down on anyone whose skin was another color, and the armies of Victoria were slaughtering spear-carrying Africans by the thousands, this pioneer anthropologist mastered 25 languages and 15 dialects (not to mention his linguistic studies of monkey jabber), and filled 43 volumes with erudite observations about native customs and natural phenomena encountered on his travels. His rage to learn—especially about anything that was taboo—had a no-holds-barred, 20th-century ring but even today it seems virtually obsessive. At a time when his fellow explorers would delicately refer to trousers and drawers as "unmentionables," Richard Burton risked scandal and even prison with his endless meditations on sexual habits that he had observed in the farthest corners of the world.

Burton's voluminous translation of *The Thousand and One Nights,* commonly called the *Arabian Nights,* is awash in notes that are distinctly more interesting than the stories themselves. It ends with a celebrated 198-page "Terminal Essay" that considers everything from the origins of gunpowder to Arab wines, and includes 42 pages on every conceivable aspect of pederasty.

The 19th century had the last word on Burton's analytical attitude toward sex. After he died, his wife, Isabel, burned his final work, a translation of *The Scented Garden,* a 15th-century piece of Arabic erotica. She also destroyed all of the intimate journals he had written over his lifetime.

Ethnologist, geologist, poet, Burton was so prescient sometimes that he almost could have been remembering material from some yet-unwritten history book. In his account of his penetration of the forbidden cities of

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Marriage portrait, done in 1861, shows Isabel at 29. Richard was then 39.

El-Medinah (Medina) and Mecca—for which he wore Arab robes and stained his skin with walnut juice to pass as a Pathan doctor—he predicted in chilling detail the Indian mutiny of 1857-58. (The British authorities ignored him, of course.) As for his preoccupation with sex, he actually anticipated many of the insights of Havelock Ellis and Sigmund Freud, according to Fawn Brodie in *The Devil Drives*, her brilliant 1967 biography of Burton.

But the man who could anticipate the future was also an anachronism—and in more ways than one. He has been described as a master at blindfold chess, an artist skilled enough to illustrate his own books and one of the finest swordsmen in Europe, all of which smacks more of the Renaissance than of the 19th century.

In fact, Burton's swashbuckling adventures and achievements are only part of his story. Much of the rest has to do with the way his Victorian contemporaries reacted to him, what they did to him. One crucial episode, a typical Burton escapade, occurred in Karachi, the capital of Sind, which had been conquered by Sir Charles Napier in 1843. (Sind became a province in northwest British India and is now part of Pakistan.) Napier was something of a character himself. Upon winning the final battle he sent back to England the single Latin word "*Peccavi,*" meaning "I have sinned." He wasn't just punning; his army had mowed down 10,000 natives.

Stationed under Napier in 1844, Burton lost no time making himself invaluable as an intelligence officer. Within a year he had mastered Persian and Sindhi, and had picked up a little Panjabi. He took to roaming the bazaars disguised as a rich merchant, occasionally smoking opium and drinking bhang (derived from hemp) with his new friends.

Napier was so impressed by his work that Burton soon became one of his favorite secret agents. When Napier heard rumors about the existence of homosexual bordellos in Karachi, hardly a mile from the army encampment, he asked Burton to find out if British soldiers were in danger of being corrupted. "Being then the only British officer who could speak Sindi," Burton would later recall, "I was asked indirectly to make enquiries and to report upon the subject; and I undertook the task on express condition that my report should not be forwarded to the [British] government [in Bombay]." The young officer,

Irascible Sir Charles Napier became the governor of Sind after conquering it.

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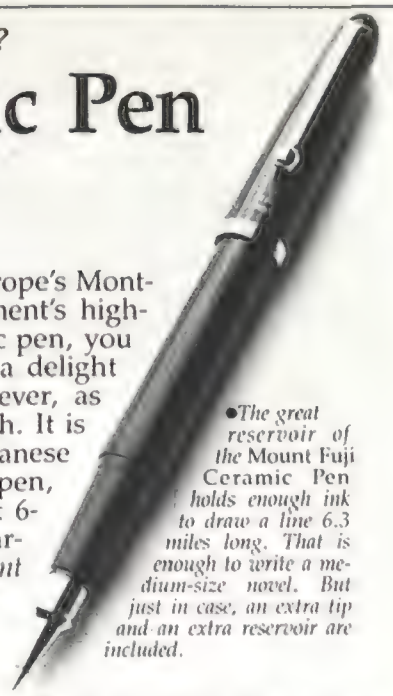

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In *Punch* cartoon, travel guides concede to Burton, who wears exotic get-up.

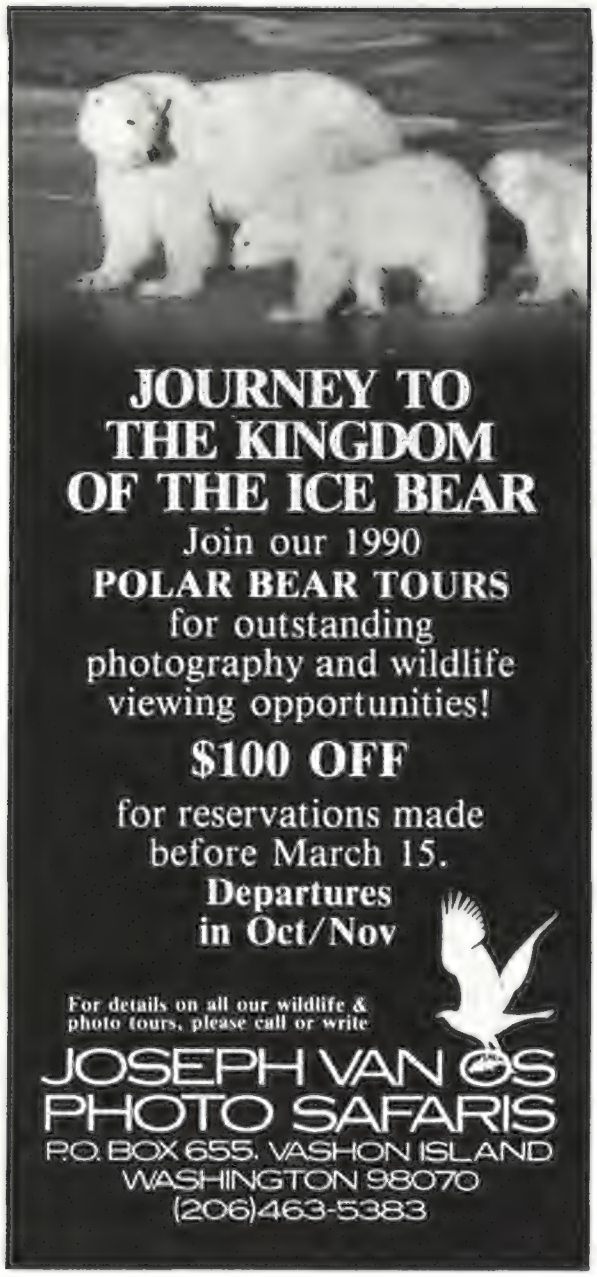
again disguised, hung around the brothels and came back with an extensive report, which Napier put away in a secret file. The brothels were duly destroyed.

Two years passed. Napier resigned and left for England. His successor—or quite possibly a fellow officer bitter about Burton's success and his arrogant ways—saw to it that the fateful report was pulled from the files, dusted off and sent on up the line to Bombay, along with a recommendation that Burton be cashiered. It was automatically assumed that anyone who spent time in one of those places must have joined in the action.

Burton wasn't dismissed, but his military career was ruined, and rumors of his "scandalous" behavior in India followed him for the rest of his life. During the Second Sikh War, in 1848, he was blatantly passed over for the position of interpreter on a much-sought combat assignment. In 1849, ill and half-blind with an eye disease, he returned to Europe in despair.

About a year later, Burton was still

A frequent contributor, Michael Kernan wrote last August about the Walters Art Gallery in Baltimore.



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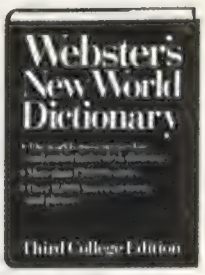

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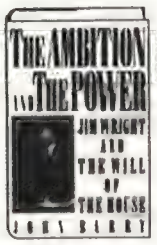

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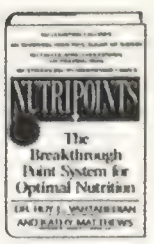

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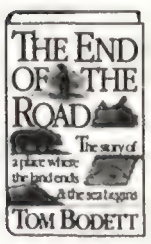

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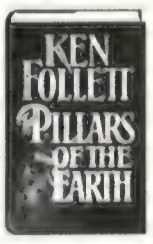

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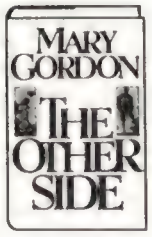

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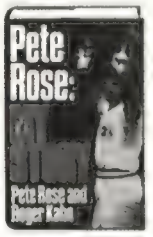

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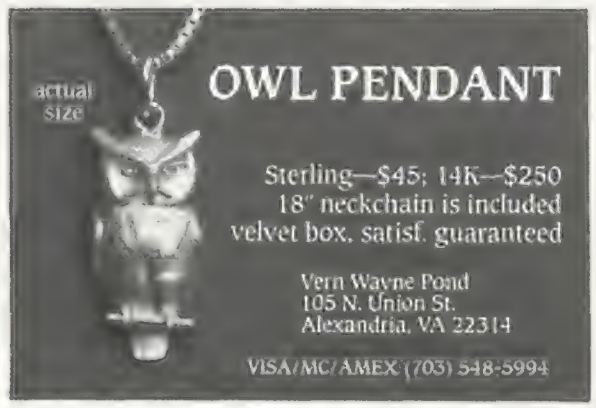

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recovering from the Sind disaster when he saw Isabel for the first time. He was in France, where he and his brother and sister had spent part of their youth, the children of a failed army officer. She was walking with her sister along the ramparts of Boulogne. She was 19, tall and blue-eyed. He stared at her with the wild, burning eyes that so many were to describe later. She turned to her sister and whispered, "That man will marry me." The next day, encountering her at the same spot, he wrote on the wall in chalk, "May I speak to you?" She picked up the chalk and wrote, "No, mother will be angry," and left. "It was," as Fawn Brodie said, "an extraordinarily wordless beginning for what was to be one of the most articulately documented of the great Victorian romances."

Their courtship did not really begin, however, until several years after that dramatic first encounter. Although it was brief, it was followed by an engagement that lasted five more years. Through storms of passion, threats and renunciations, Burton repeatedly took himself off to the ends of the Earth, while Isabel remained torn between her fantasies of adven-

John Speke holds a watch in painting. In life, he was inclined to hold grudges.

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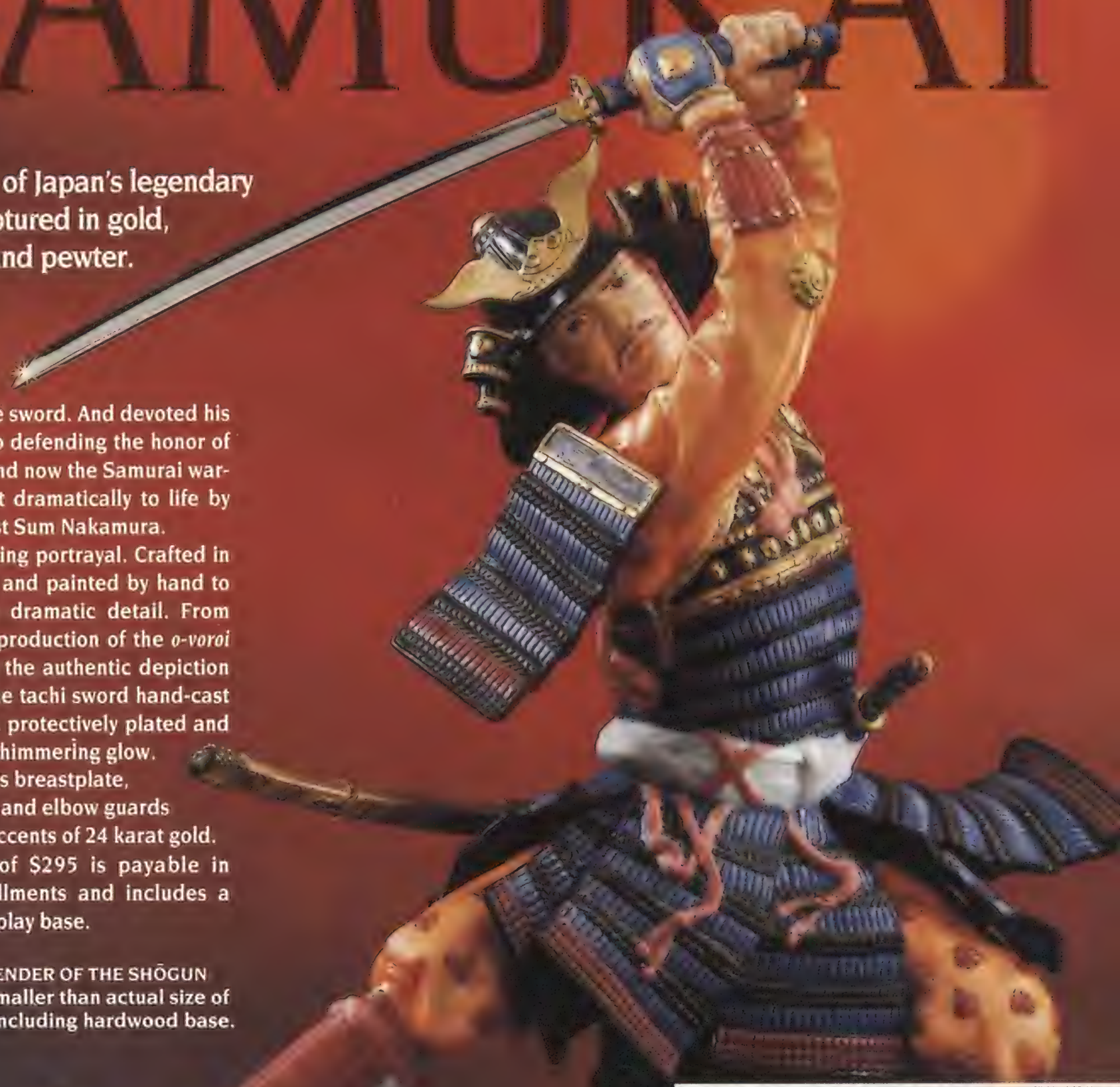

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In a new film based on the 1857-59 expedition, Burton (on crutches) and Speke search once again for the source of the White Nile.

ture with him (uncannily forecast for her by a gypsy) and the violent disapproval of her mother. Even their 29 years of marriage were, for him, a never-ending series of trips to Asia, Africa and South America, and for her, a routine of "pay, pack and follow" with their mountains of luggage or long months of waiting at home for his return.

Throughout, she tried to convert him to Catholicism. Throughout, she supported him professionally and badgered the Foreign Office for better appointments for him. Throughout, she refused to accept him fully for the Rabelaisian character he was, idealizing him as "the most pure, the most refined and modest man that ever lived."

She spoke of his "gypsy eyes" and the "fierce, proud, melancholy expression" beneath his "clearly defined, sagacious eyebrows." Writer Frank Harris noted the prizefighter face, "bronzed and scarred," and "the naked, dark eyes—imperious, aggressive eyes, by no means friendly; the heavy jaws and prominent hard chin. . . ." At about six feet, broad-shouldered, thin and muscular, with a high forehead and strong cheekbones, his face bristling with a formidable mustache, Burton was a force of nature. The eyes were what everyone noticed, "questing panther eyes"; "eyes like a wild beast"; a "look of unspeakable horror," according to the poet Swinburne, "which gave him at times an almost unearthly appearance."

Perhaps it was not a look of horror but of an insatiable restlessness. Even before he and Isabel began to court, Burton involved himself in several flirtations, wrote a number of books (including a manual on bayonet exercises) and stole into Mecca, the birthplace of Muhammad, and Medina, where the prophet is buried. Traditionally, nonbelievers were banned from those cities and, if caught, were either impaled or crucified, though by 1853 a new law gave them a choice between circumcision and death. In order to pass himself off as a Pathan doctor, Burton grew a beard and shaved his head. He tested the disguise in Alexandria and Cairo, where he used his knowledge of Eastern medicine—its magic nostrums, incantations and aphrodisiacs—to treat a variety of ailments. He also relied on hypnosis, figuring he would do less damage with his ministrations than most new British Army doctors.

In the end, he spent a month in Medina and six hair-raising days in Mecca, risking his life to measure and sketch every major shrine. He also dallied with women enough to contract syphilis. His three-volume travel book recounting his exploits was a huge hit.

Back in Cairo, or so the story goes, Burton strode past a group of British officers one day while wearing his costume. When his burnoose brushed against one of them, the man blurted, "Damn that nigger's impudence! If he does that again I'll kick him."

Burton turned and grinned. "Well damn it, Hawkins," he said, "that's a nice way to welcome a fellow after two years' absence."

"By God, it's Ruffian Dick!" shouted Hawkins.

Next, Burton persuaded the British East India Company (SMITHSONIAN, January 1988) to send him to Hārer, the religious capital of Somaliland, to size up commercial opportunities in that largely unexplored part of East Africa. He picked three officers for his staff, including a young adventurer named John Speke, who seemed to have all the right credentials: he was from a proper Somerset family and he

Indulging his penchant for disguises, Burton scowled for camera in 1863.

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In 1858, while Burton stayed in Kazeh, Speke journeyed to the lake he named Victoria. He confirmed it as the Nile's source on a later expedition with Grant.

was basically a sportsman, come to Africa for the game as well as the excitement. Speke, it turned out, was also a pompous caricature of a Victorian squire. Self-righteous and thin-skinned, he would return from the first Hārer expedition, and subsequent trips, blaming others for his own failings. It was not a pattern of behavior that would endear him to Burton.

By the mid-19th century, nothing was more fascinating to explorers than the mystery of the Nile. Why did that mighty stream, which flowed through hundreds of miles of dry basin area, never dry up? What immense reservoir fed it? The Blue Nile, the chief headstream, had been followed to its source in the 1770s, but where did the White Nile, the great main artery, begin?

The most popular legend, dating back to antiquity, asserted that the Nile sprang from fountains somewhere in the interior of the continent. Another legend, also of ancient origin, held that the place was near two huge lakes beside a snowy range of mountains. Ptolemy drew those lakes and the Lunae Montes (Mountains of the Moon) in his second-century map.

Nothing much happened there until the 1840s, when two German missionaries independently reported seeing snow-covered mountains. One of them had sighted Kilimanjaro; the

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other, Mount Kenya, to the north of Kilimanjaro. Other sightings by Arab traders told of two great lakes in the region, while there were reports of a third lake, as well. What was really down there in those impossible jungles? Could these lakes be the source of the Nile? Were Kilimanjaro and Kenya the Mountains of the Moon?

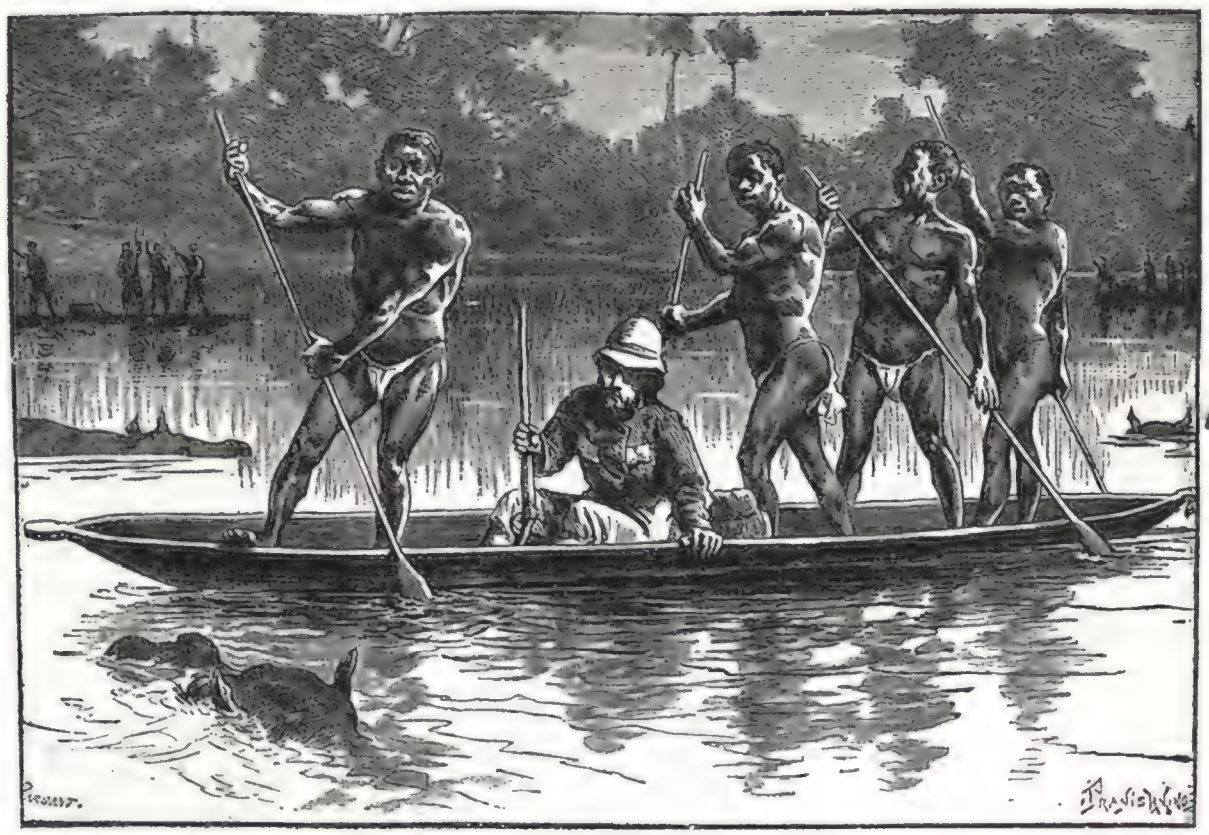
While he was in Hārer, Burton inquired about the Nile, learned of a route from the Somali coast and decided to try it. In the spring of 1855, he and Speke and the other two officers set out again. That expedition had barely gotten under way when it was attacked by a band of Somali tribesmen. During the frantic hand-to-hand fighting, Speke apparently moved back at one point to keep from being hit. Burton yelled, "Don't step back or they'll think we are retiring!" Stung, Speke charged into the attackers until he was bludgeoned down.

Burton took a javelin through both cheeks but escaped and sent for help from a friendly ship anchored nearby. Then he continued to search for his missing comrades, the javelin still stuck in his face. One of the explorers was killed, but Speke broke away and was soon rescued with Burton.

Undaunted, Burton set out with Speke on a different route, this time jumping off from Zanzibar (see map, p. 136) with a classic Victorian outfit that included 2,000 fishhooks, a dozen bottles of brandy, four umbrellas, compasses, sextants, barometers, a Union Jack, and plenty of beads, brass wire and bolts of cloth to pay the porters and trade with the tribes. Plunging into the interior, the party of 132 reached Ujiji, an Arab slavers' outpost on Lake Tanganyika, eight months later. By then, both explorers were sick, and they were beginning to get on each other's nerves.

Speke did not understand Arabic and so felt left out when Burton chatted easily with their guides. Speke seems to have regarded all of their non-Caucasian companions as inferior creatures. Burton was by no means immune to the racism of his time but he was interested in every move the natives made—their languages, their customs and beliefs, their very facial expressions.

The explorers were hopeful that the Rusizi River was the source of the Nile, but they learned from the na-



Hippo sizes up Speke and natives in a rendering of a fanciful voyage on Lake Victoria. Actually, Speke explored the Nile, not the lake, in a boat.

A superb swordsman, portly adventurer still looked formidable in his late 60s.

tives that it flowed south into Lake Tanganyika, not north. Disappointed, Burton and Speke returned to Kazeh, a central Arab base with some semblance of civilization. Here Burton decided to stop awhile to work on his notes. Speke wanted to look for a lake to the north that had been mentioned by the Arabs. Burton told him to go ahead. A critical moment.

On July 9, 1858, Speke set off north from Kazeh. After nearly a month of slogging through scrub that gradually gave way to wide plains, he came out at last on the shore of a mighty lake, an inland sea stretching to the horizon. He wrote: "I no longer felt any doubt that the lake at my feet gave birth to that interesting river. . . ." He named it Lake Victoria.

As Alan Moorehead remarks in his history *The White Nile*, "It was a reckless and astonishing conclusion to jump to, and it was quite impossible for Speke to back it up with any scientific proof. Yet he seems to have been genuinely convinced by this one short view of a tiny section of the southern shore—he stayed only three days on the lake—that he had discovered the source of the Nile."

Predictably, the two men disputed

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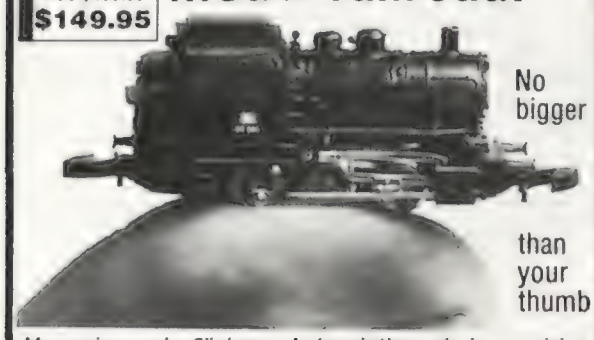

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the significance of Speke's lake. Burton thought it was merely one of the feeders of the Nile and could not be the main source. He was sure—since Speke had seen only part of the lake and had relied mostly on natives' reports—that Speke was exaggerating. From then on, Burton insisted that the Lake Tanganyika region held the answer to the Nile's source; Speke held out for Lake Victoria. Burton, Speke later reported, "used to snub me so unpleasantly when talking about anything that I often kept my own counsel. B. is one of those men who never can be wrong and will never acknowledge an error. . . ."

So they returned to Zanzibar and then to Aden, sick and exhausted. Speke, recovering first, left for England with the promise (according to Burton) that he would keep silent about their discoveries.

When Burton reached London 12 days after his partner, he learned that Speke had rushed straight to the Royal Geographical Society with the news about his "discovery" of the Nile, had given speeches and got up money for a return expedition and, in brief, had achieved instant fame. Burton and his heavily documented report on Lake Tanganyika were ignored. He wasn't invited on the new trip.

On that second try, which commenced in 1860, Speke—accompanied by another officer, James Grant—appeared to confirm his great guess. Following the same route inland from Zanzibar to Kazeh that he and Burton had taken, Speke then proceeded north, circling to the west of Lake Victoria. In 1862, he found a stream that poured in a waterfall from the lake to become, he presumed, the Nile. "I had now seen quite enough," he wrote later, "to satisfy myself that the White River which issues from the N'yanza [Victoria] at the Ripon Falls is the true or parent Nile."

The bitterness between Speke and Burton now erupted anew, with Speke taking the limelight ("The Nile is settled") and Burton disparaging him with all the cutting wit at his command. He jabbed damaging questions: How did Speke know his river was in fact the Nile? He hadn't fol-

Contemporary illustration depicts Speke (standing, at left) and Grant receiving an ovation from members of the Royal Geographical Society.

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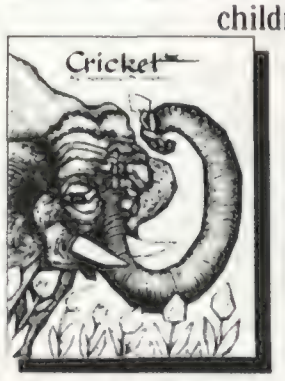

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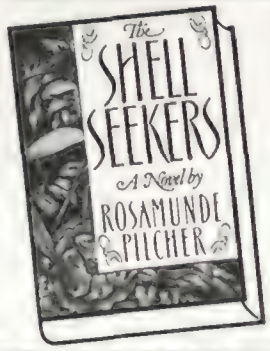

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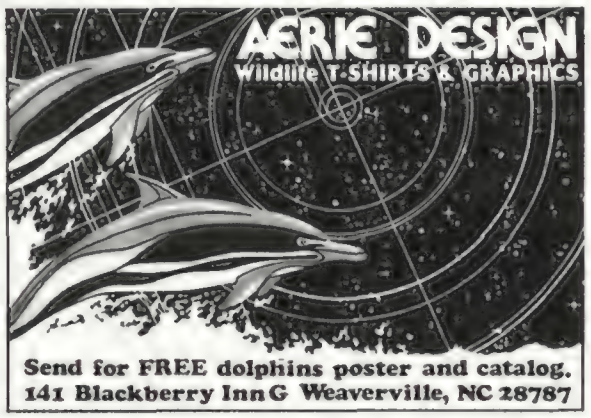
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lowed it to the known Nile, hadn't checked to see if there were other outlets, couldn't even say for sure that Victoria was one lake and not a chain. And so on.

Public debate grew steadily. Abusive letters were written. Book reviews were penned in venom. The more Speke lectured, the less many believed him. Two rival camps gradually formed among British geographers. Burton's reputation as a painstaking observer began to tell, as did the apparent impulsiveness of Speke's claims. Finally, in 1864 the uproar peaked. Speke and Burton were supposed to debate head-to-head in September at Bath.

The hall filled up. Burton stood on the debate platform with his notes, waiting for almost a half-hour. Suddenly the word came: Speke was dead. A few hours earlier, the expert hunter had accidentally shot himself in the heart. Burton is supposed to have cried, "By God, he's killed himself!"

This all begins to sound like a movie—which, in fact, it is. Bob Rafelson, director of *Five Easy Pieces* and other films, spent several months last year shooting it on location in Kenya. Called *Mountains of the Moon*, it premiered last month in

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Unhappily for the real Richard Burton, the Nile controversy did not have an old-fashioned Hollywood ending. A number of expeditions, capped by those of Henry Morton Stanley in the mid-1870s, proved Speke right and Burton wrong. Stanley circumnavigated both Lake Victoria and Lake Tanganyika, verifying that Victoria was one lake, with one major outlet—Speke's Ripon Falls—marking the start of the Nile; the lake, in turn, was fed by one major intake, the Kagera River. He demonstrated, further, that Lake Tanganyika did not have an outlet that could be considered the source of the Nile. In 1881 Burton finally made a written public admission of his complete defeat.

Meanwhile, after Speke's death, Burton's life settled down to a comparatively humdrum existence marked by a series of ordinary Foreign Office consulship postings in Santos (Brazil), Damascus and Trieste. Those were intermingled with frequent forays into other regions, but Burton's life as a serious explorer was now over, and he devoted himself to a steady stream of articles and books, most of which were not as original as his earlier volumes and not as well received. In 1886, word came that he had been knighted by Queen Victoria for his various services to the Crown. His satisfaction in hearing that news was undoubtedly muted by his awareness that Isabel had been pushing hard for the honor for some time.

During the last 15 years or so of his life, Burton also translated and arranged for the secret printing of numerous works of Indian and Middle Eastern erotica. And, of course, there was his translation of the *Arabian Nights*, which some consider his grandest achievement. A fabulous piece of work, Burton's footnotes digress on thousands of subjects. For example, Sindbad's legendary bird, the roc: Burton traces its connections to Hindu, Turkish, Greek, Russian, Chinese and Japanese traditions, and to other mythical creatures such as the phoenix, the griffin, the basilisk, the dragon and "the Aepyornus of Madagascar, a gigantic ostrich whose egg contains 2.35 gallons." In just a single volume one reads references to: the poisonous serpent's breath, methods of extracting camphor, cannibalism, sources of black pepper, the origins of "Sarandib" and "Ceylon," exotic weights and measures, the colors of ancient flags, stone worship by the Arabs, varieties of Arab handshakes—and on into the night.

How much more wonderful stuff was lost at Isabel's hand we will never know. In October 1890, at 69 years of age, Burton succumbed to his bad heart and other ailments. The circumstances of his death and his subsequent literary reincarnation constitute an ironic footnote to his rebellious life. Isabel talked a Catholic priest into giving him the last rites, though Burton had not accepted the faith and had stopped breathing besides. Then she set out to burn the writings that she considered unworthy, and to write her own 1,200-page expurgated biography of the man she called "My Earthly Master, Who Is Waiting for Me on Heaven's Frontiers."

Albert Letchford, who did illustrations for the *Arabian Nights*, painted Burton at work in the bedroom of his Trieste home, where he died.

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Book reviews

Genêt: A Biography of Janet Flanner
Brenda Wineapple
Ticknor & Fields, $24.95

In June 1925, Jane Grant wrote to her friend Janet Flanner about a magazine her husband, Harold Ross, had begun a few months earlier. The magazine was called the *New Yorker*. She wondered, since Flanner had taken up residence in France, if she might consider becoming the magazine's Paris correspondent, contributing anecdotes and "incidental stuff on places familiar to Americans and on people of note whether they are Americans or internationally prominent—dope on fields of the arts and a little on fashions, perhaps . . . and in it all he wants a definite personality injected. In fact, any one of your letters would be just the thing."

Flanner had seen a few issues of the magazine and was not impressed, but Grant assured her that things would improve, and Flanner took the job. The magazine did improve, and Flanner would be its Paris correspondent for the next 50 years.

It was Ross who gave Flanner her nom de plume, Genêt (apparently a Frenchified version of Janet), and in a large sense created her journalistic identity. He was, Flanner told Kay Boyle later, her "inventor."

Flanner was born in Indianapolis in 1892. Her father was an undertaker. Flanner's mother, who dabbled in poetry and playwriting, and apparently considered the theater to have been her true calling, inspired in all three of her daughters a love for the arts and, especially in Janet, a fierce ambition. Janet had decided early that she wanted to be a writer, and worked on stories and novels at the same time that she earned money from her journalism.

She attended the University of Chicago briefly, and wrote a column on the arts for the *Indianapolis Star*, which she continued even after she married and moved to New York in 1918. She and her husband lived in Greenwich Village, and Flanner soon became part of a lively community of writers and artists.

Before long, she met one particular writer, Solita Solano, newly arrived in the city to become drama editor of the New York *Tribune*. Flanner, who had long been troubled by her attraction to women, succumbed now to the worldly, elegant Solano. What began as a friendship developed into a lifetime of companionship. She ended her marriage and, with Solano, left America for Europe. "I wanted Beauty, with a capital B," Flanner explained later. "I was consumed by my own appetite to consume . . . the beauties of Europe."

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Ross' offer came soon after the two settled in Paris, providing Flanner with a steady, although small, income and giving her professional life order and direction. While she continued writing some fiction, and talked about beginning a historical project, her "Letter from Paris" remained her primary commitment, earning her a reputation as an accomplished journalist and sensitive cultural observer.

It was in Flanner's column that many Americans gained a close look at Matisse and Malraux, Picasso and de Gaulle. Her research took her to galleries and performances, and sent her traveling throughout France; she moved within the center of Parisian literary and artistic circles, including the salons of such American expatriates as Gertrude Stein, Natalie Clifford Barney and Nancy Cunard.

Flanner, Brenda Wineapple tells us, often was unhappy with her writing, and worked slowly and painstakingly to achieve the humor, wit and grace that characterize her prose. At the same time she seemed to enjoy having people think her indolent. She tended to "make light of her work or undervalue it; only Solita knew that Janet had trouble sitting down and writing."

Flanner's identity as Genêt dominated her life. Although we learn details of her relationships with Solano and other friends and lovers, it is clear from this biography that research and writing for her "Letter" was the core of her existence. "Her life had been an eminently private one," Wineapple writes, "devoted to concealment, not revelation, and the conscious crafting of an identity."

Flanner-Genêt's costume suggests need for privacy behind writer's identity.

Flanner, it would seem, enjoyed her work, her friends and the world she created for herself in Paris. Hers was a good life and it is a pleasure to read about it.

Linda Simon
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This superbly researched narrative tells the story of one of the great entrepreneurial races of history and reaffirms what we need always remember, that the 20th century has no lock on Man's dreams of epic deeds. The 19th didn't do badly at all; it's just that Time, that great dimmer of spotlights, has been longer at work.

In the 1830s, scientists in the United States and in Europe developed almost simultaneously the first working telegraphs. Messages could now be received mere seconds after they'd been sent. Such advances not only were revolutionary, they were contagious.

Unfortunately, telegraph poles had a habit of ending where oceans began, a problem eventually solved by going under the water and by wrapping the cable in gutta-percha rather than in rubber, which quickly broke down. In 1850 the English Channel was successfully spanned; the Mediterranean Sea and the Indian Ocean, a few years later.

Enter now one Cyrus Field, a young American out to make both name and fortune, who decided that the Atlantic Ocean could as easily be mastered. Alas, his first efforts failed, leaving another Yankee visionary by the name of Perry McDonough Collins to conceive the idea of a much shorter communications link between the two hemispheres—an overland route from Seattle through British Columbia and Russian America (now Alaska), across the Bering Strait and through Siberia. Thus was born the Russian-American Telegraph expedition. The race was on.

The year was 1864, Abe Lincoln was President, the Civil War raged and Cyrus Field was attempting a second time to span the Atlantic with his telegraph cable. Determined to beat him, Collins turned over the leadership of his government-sanctioned project to Hiram Sibley and the Western Union Telegraph Company, which had just spanned the United States. Sibley asked Charles S. Bulkley, a telegraphic engineer on leave from the Union Army, to take command of the operation, gave him a map of the North Pacific rim, and urged all speed.

The reader would do well at this point to remind himself that if he ever decides to plant poles and string wires cross-country, he'd best do it in temperate climes and not the frozen North. In 1864 the Crown Colony of British Columbia was tree-stump new, having been in existence for only six years. The rivers were navigable but half the year, the snowfields treacherous at all times, and as one field chief wrote testily to Bulkley (warm and safe back in San Francisco), the scarcity of game was balanced by the superabundance of "mosquitoes, blackflies, gnats with which the whole country literally swarms during summer time."

It was now 1865 and all through the spring and summer the hardy Western Union crew pushed the long thin line of posts and wire north through the wilderness. After some 700 miles, perhaps one-fifth of the way, actual construction ceased and survey parties took the field. The Siberian section of the line was entrusted to three young Americans and a succession of cossack guides under the command of a Russian nobleman, Maj. Serge Abasa.

Abasa decided to break the Siberian party into two groups. "All minor details, such as means of transportation and subsistence, were left to the discretion of the several parties," wrote one of the Americans. "It was no pleasure excursion upon which we were about to enter. The Russian authorities . . . did not hesitate to express the opinion that five men would never succeed in exploring the eighteen hundred miles of barren, almost uninhabited country between the Amoor river and Behring's Strait."

This Siberian segment—just exploration and surveying, mind you—was the backbreaker of the enterprise, if not the heartbreaker. Make up any list of hardships your mind can conceive—icy swamps, snow-locked mountain passes, flood-swollen rivers, unfriendly natives, shortages of material—these men endured it. When the American Richard Bush wrote his journal entries, he had

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to set his glass inkwell in the hot ashes of his campfire to keep the ink from freezing. Communication with Bulkley was abysmal: messages took months to reach him. If only the men had had a telegraph! The irony is as monumental as the suffering.

In late November of 1865, Abasa's group staggered into the village of Gizhiga, 800 miles into Siberia, "grimy, smoky, long-haired, their skin frozen and peeled." The news awaiting them from the States? Abraham Lincoln was dead; the Civil War was over.

The men rested and pushed on, through cruel blizzards and over vast frozen steppes. Courage was commonplace, yet despair stalked the explorers like a hungry wolf.

One of the expedition leaders in Russian-America apparently swallowed the strychnine he'd used to poison wild animals for their skins—destined for the Smithsonian Institution in Washington.

On through the summer of 1866 the valiant crews continued their battle against the elements, the terrain, the home office. Tragically for them, and again ironically, several thousand miles away on the balmy Atlantic, Cyrus Field had finally had a success. His transoceanic cable, operating perfectly, lay in place on the ocean floor. The overland route, in spite of all the hard work, was doomed. The race was over.

What truths sift down from that fate-starred endeavor? What lessons instruct us after all those dashed hopes? Simply this: that it is out of stubbornness as much as dreams that people get things done. If they occasionally fail it means not that the mountain was too high for them, but that the climb was made too soon. Lacking the crystal ball of history, this brave assortment of dreamers and doers couldn't see that. Yet it can never diminish what they tried to do.

William Dieter
Denver novelist

Nancy Hanks: An Intimate Portrait
The Creation of a National Commitment to the Arts
Michael Straight
Duke University Press, $22.50

The compound, and slightly contradictory, title and subtitle accurately reflect the book's origins. As a memorial to Nancy Hanks, the director of the National Endowment for the Arts (NEA) through the Nixon and Ford years, friends and colleagues contributed rec-

Hanks, unconcerned about clothes, once had upholstery scrap made into skirt.

ollections, both oral and written, to an archive at her alma mater, Duke University. "One unforeseen consequence," says the author, "was this book."

Another must surely be the scope and the critical tone of "this book," which has grown from the apparently intended group panegyric into a descriptive and keenly analytical account of Ms. Hanks' eight-year term at the NEA, that term's relation to the history and meaning of the Endowment, and the Endowment's own place in the uneasy yet continuing relationship between the American Government and the arts.

Straight manages these larger concerns in passing, but they are there. He writes of his main subject, of course, from his own special perspective as her deputy at the NEA—one who made himself her instrument after arguing against specific policy; one who took her place when she was occasionally hospitalized with the cancer that eventually killed her, at 56, five years after her term at the Endowment ended.

Straight begins Hanks' story with a brief discussion of her forebears, then proceeds to her birth in Miami Beach, and childhood in the Southwest and in the Carolina Appalachians. Her own efforts and those of her father got her into government. She started in Harry Truman's Administration as a receptionist for the Office of Defense Mobilization under Charles E. Wilson. She soon became Wilson's secretary, and stayed on after the Eisenhower election. Hanks then moved over to Ike's Advisory Committee on Government Organization and there met the committee's chairman, Nelson A. Rockefeller, an early FDR appointee fired by Truman, recycled by Eisenhower. It was a fateful meeting.

When Rockefeller became chief administrator of the new Cabinet department the committee had campaigned for, Health, Education and Welfare, Hanks went with him as his secretary.

In 1955, as Eisenhower's special assistant for psychological strategy, Rockefeller accompanied the President to Geneva for a summit meeting with Nikita Khrushchev. Nancy Hanks was the only woman on his staff to make the trip. By then their relationship had become intensely personal as well as professional. By the time it ended, Hanks had acquired work habits that lasted for the rest of her life and many of the skills that contributed to her success when Richard Nixon appointed her to direct the NEA in 1969.

One great virtue of this book is its well-organized tour of the arts in America as they affected and were affected by the NEA under Nancy Hanks. Straight voices his own reservations about things that worked and things that didn't. The underlying argument of the period—and indeed of the arts in America—is the one between "elitism" and "populism," however those overworked words may be meant.

Nancy Hanks is given universal credit for the vast increases in NEA funding that took place during her tenure, and she certainly had an unerring sense for connecting art grants with key members of Congress, which didn't hurt. But actually, the huge increases in art funding year after year during the Nixon Administration were Nixon strategy. It was first stated in a memorandum by campaign worker Charles McWhorter, an AT&T attorney. Foreseeing lost support in the cities when the cutback on President Lyndon Johnson's Great Society programs got rolling, he proposed an "offset" counterpolicy of increasing funds for less costly, but worthwhile, programs. First on his list: the arts.

This book is lively with an intense awareness of the politics of art on all levels, not excluding the highest. Taken with—and to some extent played against—the account of his own NEA stewardship by Livingston Biddle (SMITHSONIAN, October 1988), who succeeded Hanks under Jimmy Carter, the book offers as full a chronicle and as acute an analysis

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Isabelle: The Life of Isabelle Eberhardt
Annette Kobak
Knopf, $22.95

"Her life seems haphazard, at the mercy of caprice, but her writings prove otherwise. She did not make decisions; she was impelled to take action. Her nature combined an extraordinary singleness of purpose and an equally powerful nostalgia for the unattainable. Over the years the goal imperceptibly changed from the idea of simple escape to the obsession of total freedom."

Paul Bowles, the American writer and composer who has lived for 40 years in Tangier, Morocco, wrote that about Isabelle Eberhardt in a preface to *The Oblivion Seekers*, his volume of translations of Eberhardt's stories. Bowles, who has resolutely gone his own way for six decades now, would understand a woman such as this.

Eberhardt is one of those distant figures at the edge of our consciousness. Born the illegitimate daughter of an aristocratic Russian woman in Switzerland in 1877, she fled Europe at an early age, traveled widely in the deserts and mountains of Algeria, dressed as a man (for convenience in riding, she said), embraced Islam, wrote several books, won lasting notoriety for her bravery, her independence and her sexual appetite, and died young. Little has been written about her in English, other than Cecily Mackworth's 1951 biography, *The Destiny of Isabelle Eberhardt*; Lesley Blanch's 1954 *The Wilder Shores of Love*, a fascinating account of Western women drawn to exotic lovers; and Bowles' brief preface. Besides her stories, Eberhardt's diary has been translated as *The Passionate Nomad* and her novel *Vagabond* has been translated by Annette Kobak, author of this new biography.

At 18, Eberhardt dressed as a sailor, said "I was brought up just like a boy."

Bowles, in fact, understands Eberhardt better than Kobak does. Her biography is marred by colorless writing, failure to attribute quotations, and a careless bibliography; she has, for example, listed *The Oblivion Seekers* as a book "on" Eberhardt rather than "by" her. Still, not even dull writing can spoil the life story of one of history's most enigmatic and intriguing characters. Although she misinterprets the facts of Eberhardt's life, Kobak does set forth those facts, along with generous excerpts from diaries and letters.

In winter 1901, Eberhardt wrote to her brother, Augustin, "Do you remember the passage from [Loti's] *Roman d'un Spahi* which begins 'He loved his Senegal, poor fellow'? Yes, I love my Sahara, with an obscure, mysterious, profound, inexplicable, but very real and indestructible love." Later she wrote in her journal, "the *fundamental* need of my nature is *variety* of scenery . . . great difficulties and crises of despair recharge my energy and calm my nerves. . . . *Monotony* and *mediocrity* of settings and atmospheres, these are the enemies." At another time she observed, "It seems to me that with will power, it would be easy for me to reach the mysterious goal which would entrance me and open unpredictable horizons. . . ."

Eberhardt suffered little monotony. Haunted by an unorthodox childhood, plagued by poverty, hounded by moral disapproval, stymied by political intrigue, and injured once in an attempt on her life, she nonetheless managed to live most of her short adult life (she died in a flash flood at 27) on Saharan sands and to find, at last, an Arab husband whom she passionately loved.

Kobak is convinced that the driving force of Eberhardt's life was "the writer and observer in her," but the facts suggest that her writing, other than her letters and journals, was more a convenient excuse for her actions than the real goal of her existence.

Isabelle Eberhardt traveled dangerously far from home but discovered nothing new. She wrote several interesting books but left no great works of literature. She touched on the great political and religious storms that swept North Africa during her time there, but her involvement was marginal and did not change history. In fact, what really interests us about Isabelle Eberhardt is her strength of mind, her overwhelming will to be free of restraint: to abandon the continent and the historical age that bore her, to live as she chose, to go her own way. In the end, she is famous and fascinating simply for identifying her own nature and then, despite obstacles, living a life that was true to it. The Saharan sand has long since covered her footsteps, but her "obsession of total freedom," as Paul Bowles has written, continues to puzzle the dull and challenge the bold.
Alan Ryan
New York journalist and novelist

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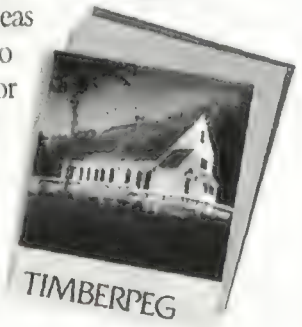

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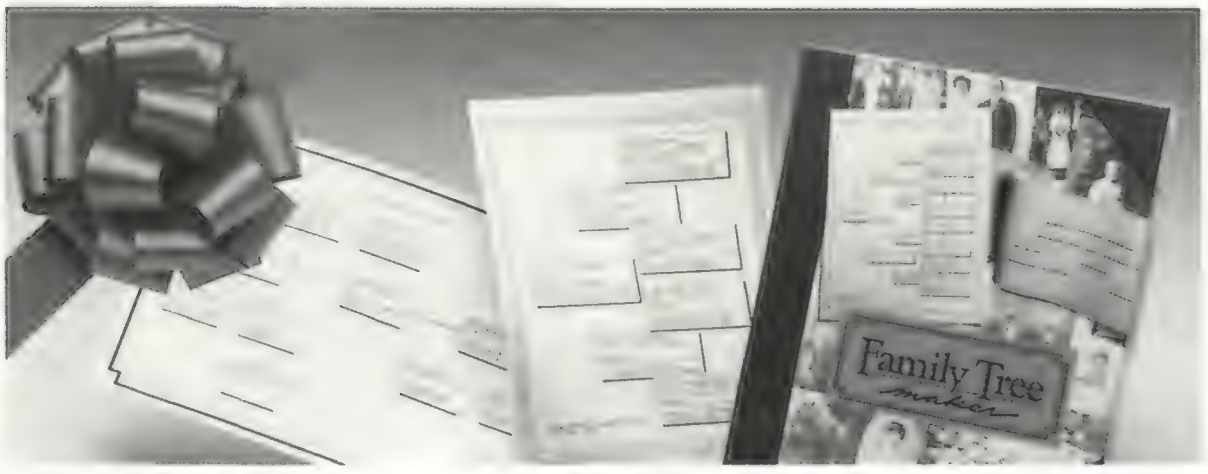

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Smithsonian highlights

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The Associates' Planning Packet is yours for the asking. Send a postcard to Associates' Reception Center, Smithsonian, Washington, D.C. 20560, or call (202) 357-2700. For hearing-impaired visitors, use TDD and call (202) 357-1729. Begin your visit at the Associates' Reception Desk, located in the Smithsonian Castle.

Castle reopens, Freer remains closed

The Castle has reopened with a new Smithsonian Information Center and Associates' Lounge. Hours are 9 A.M.-5:30 P.M. daily. The Freer Gallery of Art is closed until 1992.

Musical Weekend

Highlights of the 18th Smithsonian Musical Weekend, April 20-22, will include the Smithsonian Chamber Orchestra performing Beethoven and Haydn symphonies; dinner in the Castle; tea and music at the Australian Embassy; a performance on the Erard piano newly acquired from Balmoral Castle; and a champagne breakfast in the Bird House of the National Zoo. To obtain additional information, write: Musical Weekend, Box 11271, Washington, D.C. 20008.

Special February exhibits and events

National Museum of Natural History
The First Egyptians (through April 1) The first major show to explore the world of predynastic Egypt. See *Highlights continued*, page 160.
Nomads: Masters of the Eurasian Steppe (through February 18) Landmark exhi-

bition featuring more than 1,000 nomadic artifacts from Soviet museums.
Portraits of the Great Saturniid Moths (through June 1) Illustrations by John Cody.

National Museum of American History
European Shawls (through October 1990) Stylish wraps from the museum's Division of Textiles.
Greek Revival (through March) Photographs documenting the history of a uniquely American architectural style.
Workers and Managers: The Crises of Control in American Manufacturing (through February) Labor history seen through photographs and artifacts.
Men and Women: A History of Costume, Gender and Power (through December) An examination of culturally determined appearance and behavior.

Anacostia Museum
The Real McCoy: African-American Invention and Innovation, 1619-1930 (through May) An overview of outstanding black inventors and anonymous innovators who made important contributions to American technology.

National Museum of African Art
Icons: Ideals and Power in the Art of Africa (through September 3) A survey of African art, focusing on recurrent themes.
Royal Benin Art Creations from court artisans, 15th through 19th centuries.

Renwick Gallery
George Ohr: Modern Potter, 1857-1918 (February 9-June 3) Turn-of-the-century pieces by the Mississippi ceramist.
Masterworks of Louis Comfort Tiffany (through March 4) Sixty-two objects, including leaded-glass windows, ceramics, bronzes and paintings.

International Gallery, S. Dillon Ripley Center
Caribbean Festival Arts (through February 15) Costumes, music, videotapes, photographs evoke the sights and sounds of the Caribbean street festival.

National Museum of American Art
Treasures of American Folk Art from the Abby Aldrich Rockefeller Folk Art Center (through February 19) More than 180 objects, paintings to pottery and quilts, from the extensive collection.

Arthur M. Sackler Gallery
India Along the Ganges: Photographs

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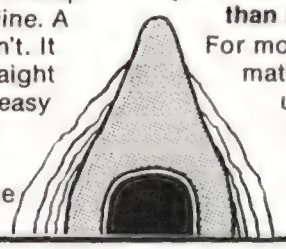

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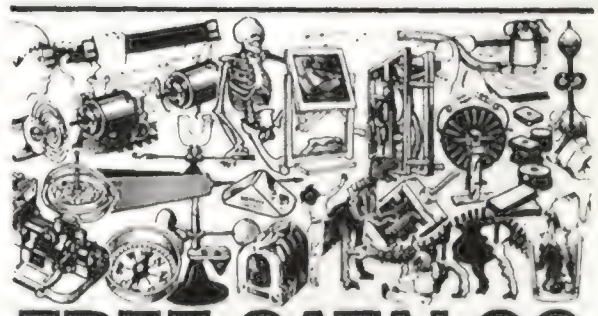

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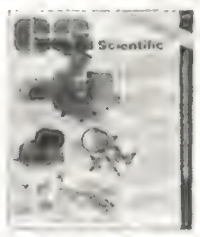

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by Raghubir Singh (through April 15) Fifty dye-transfer prints by the acclaimed photographer.
The Noble Path: Buddhist Art of South Asia and Tibet (through September 30) More than 100 objects reflecting the changing imagery of Buddhism.

National Portrait Gallery
To Color America: Portraits by Winold Reiss (through April 1) The German-born modernist's 1920s and '30s depictions of American minorities.
Recent Acquisitions (through April 2) A selection of new holdings.
The "Edgehill" Portrait of Thomas Jefferson (through 1992) The painting by Gilbert Stuart, on view for three years.

Hirshhorn Museum & Sculpture Garden
Culture and Commentary: An Eighties Perspective (February 8-May 6) Fifteen artists whose works reflect the changing society of the past decade.
Matt Mullican: WORKS (through March 11) A rug by the New York artist.

National Air and Space Museum
Commuting in the Modern Manner: The Grumman Goose Amphibian (indefinite) A look back at the 1930s "limousine of the air."
The Aviation Careers of Igor Sikorsky (indefinite) An overview of the aviation pioneer's achievements.
Carrier War in the Pacific (permanent) Six major battles through models, maps, photographs, films.
Beyond the Limits: Flight Enters the Computer Age A major new gallery explores the computer revolution in aerospace.

Cooper-Hewitt Museum (New York)
E. McKnight Kauffer: Graphic Art and Theater Design (through April 1) Retrospective look at the graphic designer's varied and productive career.
The Intimate World of Alexander Calder (through March 11) More than 300 whimsical works, from toys to caricatures.

Exhibition catalogs

Catalogs available currently include:
Treasures of American Folk Art (paper, $22.50; cloth, $35)
Caribbean Festival Arts (paper, $25.95; cloth, $39.95)
Nomads of Eurasia (paper, $24.95; cloth, $39.95)
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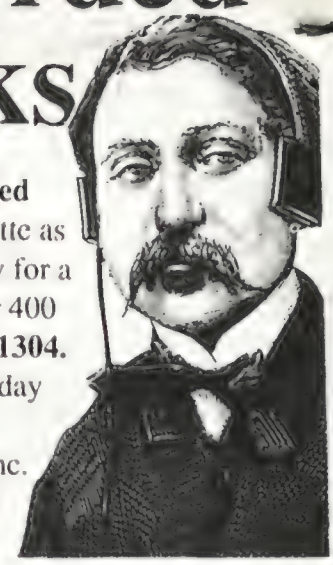

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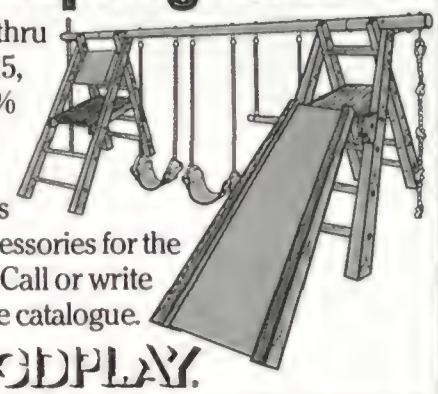

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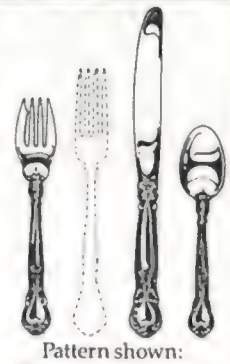

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Smithsonian on the air

Radio Smithsonian: Features include stories on the 20th-Century Consort, slave quilts and the Voyager 2 project.
Here at the Smithsonian: Three-minute TV spots take you behind the scenes.
To find out what stations in your area are carrying these radio and TV programs, write: Office of Telecommunications, MAH Room BB40, Washington, D.C. 20560.
Smithsonian World: The television series opens its fifth season with "A Moveable Feast," exploring how technological change has allowed Americans to adapt our eating habits (February 21; check local PBS stations for listings).

Resident Associate Program

To become a Resident Associate, or for fee and ticket information, call 357-3030.
Damon Evans: In Celebration (February 17; 7:30 P.M.) The renowned tenor makes his Smithsonian debut.
20th Century Unlimited: A Dialogue with Edward P. Morgan (February 5; 8 P.M.) A distinguished journalist looks back on his life and times.
The End of History? An Evening with Francis Fukuyama (February 14; 8 P.M.) The State Department official's provocative views on world events.

Smithsonian Institution Traveling Exhibition Service

SITES organizes and circulates exhibitions to cities throughout the United States and abroad. To sponsor a show in your community, write SITES, Smithsonian, Washington, D.C. 20560. Here are some February exhibits:
Bethlehem, Pennsylvania (February 10-March 11) *Black Wings: The American Black in Aviation,* Payne Gallery.
Fitchburg, Massachusetts (February 3-March 4) *After the Revolution: Everyday Life in America, 1780-1800,* Fitchburg State College Campus Center.
Honolulu, Hawaii (February 10-May 6) *Inside Active Volcanoes: Kilauea and Mount St. Helens,* Bishop Museum.
Palm Beach, Florida (February 9-March 11) *Irish Decorative Arts from the National Museum of Ireland,* Society of the Four Arts.

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Highlights continued

Treasures from early Egypt

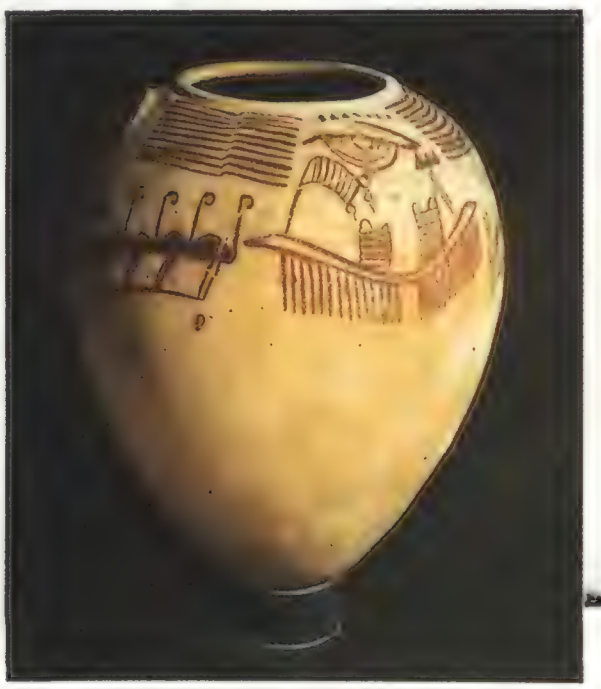
In 1894, the celebrated archaeological pioneer Sir Flinders Petrie discovered 2,100 tombs at a site just north of Luxor. His early excavations at Naqada would soon lead him to conclude that he had made a remarkable find.

The graves contained handmade pots, pendants of ivory and bone, terra-cotta figurines and other artifacts—all evidence of a previously unknown culture predating the pharaohs.

This lost and compelling world of predynastic Egypt is the focus of "The First Egyptians," an exhibition devoted to the everyday life of a society that flourished along the Nile from 4000 B.C. to 2700 B.C.—and that gave rise to one of the world's great civilizations.

The show also offers an absorbing look at the work of archaeologists following in Sir Flinders' tradition. Photographs, artifacts and scale models recreate the research of University of South Carolina archaeologist Michael A. Hoffman. He has been head of the team excavating predynastic Hierakonpolis, a site that so far has yielded Egypt's oldest temple. Organized by the University of South Carolina's McKissick Museum, the exhibit is at the National Museum of Natural History through April 1.
Kathleen M. Burke

Flint knife's gold-foil-wrapped handle is inscribed with hieroglyphs of King Djer; it dates from about 3100 B.C.



Roll-rim jar ornamented with flamingos, boats, 3400 B.C., was Flinders Petrie's.

Craftsmanship of later dynastic period is seen in this incised-bronze cat statuette, surfaced with malachite patina, c. 600 B.C.

Late-dynastic pendant, worked in faience, represents a winged scarab, the beetle that symbolizes the sun god and rebirth.

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Domestic Study Tours

Death Valley, California *March 12-21* Discover the mountains and canyons of the Mojave Desert area.

Savannah-Charleston *March 18-25 or April 1-8* Historic homes and gardens.

Big Bend, Texas *March 21-30* Hike this wild scenic park; visit McDonald Observatory.

Grand Canyon Weekend *April 5-8, 26-29 or May 3-6* Explore the South Rim.

Arizona in Spring *April 18-26 or April 25-May 3* Cacti and wildflowers in bloom from the Sonoran Desert to the Chiricahua Mountains.

Spring Gardens *April 26-May 3* Study historic gardens in Washington, D.C. and the Delaware Valley.

Okefenokee *May 1-6* Canoe in a wildlife refuge; for novice or expert.

Philadelphia Weekend *May 3-6* Society Hill walking tours; visits to private collections and the Barnes Foundation.

Bryce, Zion and the North Rim *May 10-19* Moderate hikes for outdoor enthusiasts.

Arches and Canyonlands *May 19-26* Easy hiking in Utah.

Southwest Indians *May 24-June 3* Features Hopi and Navajo cultures; includes Mesa Verde and Monument Valley.

New York City *May-June* Enjoy a weekend of walking tours, museums and theater.

Chicago Art and Architecture *June 13-17*

Auto Barons *June 14-17* Visit estates of Ford, Fisher and Dodge outside Detroit.

Alaskan Landscapes *June 21-July 3 or July 26-August 7* Float down the Kenai River; visit Nome; hike in Denali National Park.

NEW Colorado for Families *June 24-30* Nature study for families with children, 7-15.

Grand Canyon Rafting *June 29-July 8 or July 27-August 5*

Pueblo Indians *July 14-22* Based in Santa Fe; concludes with an annual crafts fair.

Alaska Cruise *July 30-August 10* Explore the Inside Passage aboard an expedition ship.

Foreign Study Tours

NEW Spring Interludes Uncrowded museums, cultural events and leisurely exploration in Lisbon or Kyoto.

Mesoamerican Study Programs *February-March* Archaeological treasures of Guatemala or Oaxaca.

European Countryside Programs *February-October* Relax in scenic and historic areas of Austria, Denmark, England, France, Greece, Hungary, Italy or Wales.

NEW Trinidad and Tobago *March 3-13* A birder's paradise in the West Indies.

India Arts and Crafts *March 8-April 4* Focus on village artisans, local crafts.

Budapest Music *March 14-25* International performances, museum visits, excursions.

NEW Jamaica *March 17-27* Culture and customs of this West Indian island.

NEW Dakar (Senegal) *March 17-31* History, culture arts in West Africa.

Sea of Cortés *March 18-25* Cruise Mexico's Gulf of California—blue whales, wildlife.

British Theatre *March 22-April 1*

Berlin: East and West *April 11-25* Also Wittenberg, Weimar, Dresden.

NEW Van Gogh Centennial *April 20-May 5* Van Gogh in Amsterdam, Paris and Arles.

NEW Morocco Treasures *April 28-May 12* Casablanca, Fès, Marrakech and more.

NEW Southern Italy and Sicily *April 28-May 12* Culture, art and history.

Zimbabwe-Botswana *May 8-25* Includes Victoria Falls and Okavango Delta.

Istanbul and Beyond *May 9-24* Visit central Anatolia or the Aegean coast.

NEW English Gardens *May 12-25*

Two Chinas *May 20-June 2* Includes Hong Kong and Taiwan.

Devon and Cornwall *May 23-June 6 or June 6-20* Scenic English countryside.

Brazil Parks *May 23-June 8* Also visit São Paulo, Rio de Janeiro, Manaus.

Waterways of France and Spain *May 24-June 7* Cruise from Seville to Southampton.

Cotswold Walks *May 24-June 5 or October 4-16* Follow enchanting paths through rolling hills northwest of London.

USSR Golden Ring *May 26-June 9 or September 1-15* Moscow, Leningrad and beautiful old Russian towns.

Danube Voyage *May 27-June 12* Art and history from Romania to West Germany.

NEW Islands of Japan *June 3-16* Cruise aboard the new *Renaissance.*

Poland *June 8-24* See history in the making. Includes Warsaw, Kraków and more.

Russia by Train *June 13-July 1 or June 23-July 11* Includes Riga and Murmansk.

Amsterdam and the Dutch Countryside *June 14-27* Visit museums and farms.

Shadows of the Past *June 16-29* Chateaus, caves and villages of Dordogne. Includes Paris.

Swiss Walks *June 20-July 5* Reside in mountain inns. Explore on foot.

Lake District Walks *June 28-July 9* Leisurely exploration of England's picturesque northwest corner.

Scotland by Train *July 5-18*

NEW Kenya *August 2-19* Tent safari.

Smithsonian Seminars

Explore diverse topics in depth with top scholars during classroom study and tours.

America's Future in Space: Manned or Unmanned? *March 13-16* Washington, D.C. Includes Goddard Space Flight Center and Wallops Flight Facility in coastal Virginia.

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SMITHSONIAN-STYLE

American Coins and Currency *March 20-23* Washington, D.C. Study with experts at the National Numismatic Collection. Visit the Bureau of Printing and Engraving.

20th-Century Furniture *April 30-May 4* Washington, D.C. Join historians and furniture makers on visits to working studios and private collections.

The New Astronomies *May 13-18 or May 20-25* Arizona. Study with astronomers at the Smithsonian's Whipple Observatory.

Florence *May 26-June 10* Classes and excursions based in a villa-hotel near Boboli Gardens.

Rome *September 13-25* Explore the roots of Roman culture during lectures, site visits.

Research Expeditions

Contribute your time, talent and financial resources to Smithsonian research. Work with curators at the Smithsonian or at field sites around the country and the world.

Washington, D.C. *March 4-16 or July 22-August 4* Archive historic aviation documents at the Air and Space Museum.

Costa Rica *March 31-April 12 or April 14-26* Monitor Arenal Volcano's eruptions and study local vegetation.

Washington, D.C. *May 23-June 6* Photodocument Memorial Day activities.

Washington, D.C. *June 6-16* Prepare anthropology collections of animal bones for transfer to a new facility.

Washington, D.C. *June 25-July 8* Photograph the Festival of American Folklife.

Montserrat *July 1-14, 15-28 or July 29-August 11* Excavate slave quarters and a cemetery at a Caribbean sugar plantation.

Cody, Wyoming *July 15-28* Collect plant fossils near Yellowstone.

Cheyenne, Wyoming *July 18-30* Document the annual Frontier Days celebration.

New York City *August 1-11* Reconstruct pottery from the Caribbean.

Orofino, Idaho *September 12-20* Record Lumberjack Days festivities.

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By Richard Wolkomir

Halston? No way! We'll take Holstein any day

Have you acquired, as yet, a Holstein-colored stool (black-and-white) with a pink wooden udder underneath?

Do you have a Holstein mailbox?

A "Holsteam" tea kettle?

Here in the Golden Age of Cow Things, you can wear sweaters decorated with Holsteins. You can quaff coffee with your favorite nondairy creamer from mugs with Holstein handles. You can post memos on your refrigerator with Holstein magnets. You also can send greetings to your friends on a Chicago company's Udderly Cool Cards, not to mention buying them presents at a Stowe, Vermont, boutique called Everything Cows.

Imagine, for instance, munching a chocolate Vermont Cow Pie that looks fresh from the pasture. For a post-prandial nap, lie back on your Holstein pillow. Or unfurl your cow umbrella, with Holsteins grazing all around it, and hurry to the bookstore for a copy of *Wholly Cow* by Emily M. Gwathmey, about all things bovine. Do read a periodical shamelessly entitled *Cowsmopolitan*, edited by "Ellen Guernsey Brown," with articles like "How To Milk Your Ex For Everything."

Cowmania isn't entirely new. As a growing lad, I always drank my daily quart of homogenized from an Elsie the Cow mug. And bovinophilia goes back at least to the ancient Egyptians, whose love goddess, Hathor, was often represented as a star-studded cow. A well-known old nursery rhyme celebrates a cow that jumped over the moon, inspiring one cartoonist to draw a bull and calf jointly witnessing the athletic leap, with Dad declaring: "Son, your mother is a remarkable woman."

But ours is an era of unprecedented cowdolatry. To find out why, I called artist Woody Jackson in Middlebury, Vermont. He's president of a company called Holy Cow Inc. and is one of the fad's progenitors.

"Holsteins are *the* cow now," he told me. "They have great graphic elements, that straightforward black and white." That was only a start, however. There's more to today's Holsteinism than just milk and money. Holstein-Friesians (their formal name) originated in the Netherlands, making their U.S. debut in 1852, when a Holstein arrived in Boston aboard a rum ship. Now roughly 90 percent of U.S. dairy cows are Holsteins because they are mighty producers, averaging 17,400 pounds of milk a year. Stars like G. Metcalf Valiant Mist E.T., a Vermont cow that sold for $1.3 million in 1985, can produce as much as 33,000 pounds of milk in one year. Mist, wearing a tiara, had her picture taken for *People* magazine.

But Holstein-Friesians are not just a pretty face. "The cow is a maternal image," says Woody Jackson. "And cows relate a lot to our own previous, more-pastoral existence."

As I see it, the telling word is "previous." Cattle used to be the landscape's punctuation, and our relationship with the barn goddess was personal. D. H. Lawrence, for instance, had a black cow, Susan. She exhibited a "cowy peace" when being milked, he wrote, but could be puckish, too. "She knows quite well she makes me mad when she swings her tail in my face," said Lawrence. "So sometimes she swings it, just on purpose: and looks at me out of the black corner of her great, pure-black eye, when I yell at her."

Now that an acre of Palladian-windowed neo-Victorians is worth a million times an acre of Susans, Elsies and Bossies, family farms are winking out like village lights after midnight. So instead of cows, we now have collaborative multimedia cow events, like "Absolute Cow," a nearby college's bovine bash, dedicated to the vanishing dairy farm. It featured a woman-bovine pas de deux, clay minicows on a grand piano, cow sculptures, cow poems and a room full of sculpted cow heads, with jaws that moved as each cow narrated taped cow stories.

A sign at "Absolute Cow" warned: "One million family farms in the United States will disappear between now and the year 2000." But we're compensating.

In this land of ferocious symbols, with our sports teams mostly named for bears, large hunting cats, and birds of prey, we may be turning to a calmer, more cud-chewing totemism. For instance, children now can ride a "rocking cow." Ballet enthusiasts can buy a cup picturing a lithe dancing cow—Baryshnicow. And a Vermont newspaper editorial has suggested repopulating the meadows with analogues of the "pleasure horse"—the "pleasure cow."

Alternatively, you can invest in a herd of plywood Yard Cows. As the ad says, the Yard Cow offers the "pride and obvious stature of livestock ownership with none of the smell, clean-up and pre-dawn chores."

I don't have a Yard Cow yet, but I do have a "Far Side" cow cartoon above my desk. It shows a cow pilgrim sitting at the feet of a cow guru, who is saying: "And, as you travel life's highway, don't forget to stop and eat the roses."

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